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MINNESOTA MEDICINE

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Vol. XV

AUGUST, 1932

No. 8

PLACEMENT OF THE CHILD BORN OUT OF WEDLOCK: IS IT AN EXCLUSIVE PUBLIC FUNCTION?*

THE HONORABLE EDWARD F. WAITE
Judge of the District Court, Hennepin County
Minneapolis

ONE of the most interesting social developments of all recorded time is the evolution of the Twentieth Century relationship of the State and the Child. Not only among savage tribes but in ancient civilizations the power of the father over the young child was supreme. He could mutilate, kill or sell into slavery at will. Organized government—when government began to be organized—took no heed.

When the State first interfered for protection its action was prompted by military considerations, and went no further than such interests seemed to require. In the early centuries of Christianity and throughout the Middle Ages the Church was the protectress of children: the State did nothing. In very modern times (and for us English-speaking people, through the decisions of the English High Court of Chancery—the “keeper of the king’s conscience”—rather than through the law-making bodies) there developed the idea of the State’s responsibility for the welfare of all citizens who by reason of infancy or other incapacity are unable to care adequately for themselves. This social and political concept of the State as ultimate guardian has now become as firmly established in the United States as any principle of law. It was recognized by the Minnesota Supreme Court forty years ago, and has been many times applied in later decisions of that court. With governmental duty goes, of course, governmental authority.

Whether we like it or not—and probably we all are satisfied with the principle, though we may not always agree on applications of it—it is the settled law of Minnesota that the state

has the obligation to see, so far as practicable, that every child within its borders is protected in those interests which are commonly recognized as the fundamental rights of childhood; and the power to do what is reasonably appropriate to that end. To say this, however, is only to lay down a general principle. Whenever the principle is applied it is necessary to make decisions as to whether the particular child is or is not already having its welfare properly safeguarded; and if not, what ought to be done about it, who shall do this, and how. The limits within which these decisions are left to private or official choice are different in different states of the Union, according as the legislature has entered the field by the enactment of specific laws.

In answering the question to which this paper is addressed we must of course have regard to the laws of Minnesota. What laws have we to govern the placement of children born out of wedlock? Where lies the legal duty to execute these laws? What are the legally prescribed methods? When these questions have been answered it would not seem too much to hope that all good citizens will render obedience to the law as it is, even though they may not thoroughly approve of it. If it is wrong, let it be changed.

Sec. 4455 of the Minnesota Statutes is as follows:

It shall be the duty of the board of control when notified of a woman who is delivered of an illegitimate child, or pregnant with child likely to be illegitimate when born, to take care that the interests of the child are safeguarded, that appropriate steps are taken to establish his paternity, and that there is secured for him the nearest possible approximation to the care, support and education that he would be entitled to if born of

*Presented at the monthly meeting of the Hennepin County Child Welfare Board, April 8, 1932.

lawful marriage. For the better accomplishment of these purposes the board may initiate such legal or other action as is deemed necessary; may make such provision for the care, maintenance and education of the child as the best interests of the child may from time to time require, and may offer its aid and protection in such ways as are found wise and expedient to the unmarried woman approaching motherhood.

Section 4456 provides that "it shall be the duty of the board to promote the enforcement of all laws for the protection of" certain groups of handicapped children and among them the illegitimate; "to cooperate to this end with juvenile courts and all reputable child-helping and child-placing agencies of a public or private character, and to take the initiative in all matters involving the interests of such children when adequate provision therefor has not already been made."

The right to make complaint against the putative father is given to the Board; also authority to accept for the benefit of the child a settlement of the father's pecuniary obligation for the child's support.

What could be plainer than that the state intends to assert in the case of the illegitimate child its sovereign function of ultimate guardianship, to be exercised through the agency of the State Board of Control? When in any county there is a duly organized county board of child welfare, upon it develops the duty to represent locally the Board of Control in discharging the latter's statutory responsibilities in respect to illegitimates. Private corporations organized for the purpose of placing children in permanent homes must be approved by the Board of Control and all their placements are subject to the Board's supervision, including those made under contract, which are limited to the girl's sixteenth and the boy's eighteenth birthday.

But the law goes further than to declare its purpose and designate its agents. It prescribes methods. It provides for the licensing of maternity hospitals by the State Board of Control and for their supervision by that body in connection with local health authorities. It establishes a definition of maternity hospitals which includes all lying-in places operated for profit. It requires records, subject to official inspection, identifying the patient, the attending physician or midwife and any person who takes the child away for placement or adoption. It is made the duty of the licensee or person in charge to ascertain whether the child is legitimate, and to advise

the Board of Control if there is reasonable ground to believe it illegitimate. It is provided that "no person, as an inducement to a woman to go to any maternity hospital for confinement, shall in any way offer to dispose of any child or advertise that he will give children for adoption, or hold himself out as being able to dispose of children in any manner." The mother, if in a licensed hospital, is required to nurse her child for three months, when possible.

One of the most important features of the revision of Minnesota's Children's Laws in 1917 was the elimination of the mercenary and unsupervised baby-farm. For these were substituted licensed boarding homes, subject to visitation by the Board of Control. Here again it is the duty of the licensee or person in charge to advise the board of such information as may be obtained relative to the legitimacy of the child. The power of either or both parents permanently to transfer custody of a child under fourteen years of age, otherwise than in a court proceeding, has been abolished; and whenever any parent—directly or through another person—has put a child in a private home with a view to permanent placement, and the arrangement has continued for more than six months, it is required that the Board of Control be given full information concerning the placement. It then becomes the duty of the Board to supervise the placement as it supervises those made by the State Public School or by incorporated and approved child-placing agencies, with power of removal if the home is found unsuitable.

An illegitimate child is declared to be *ipso facto* dependent, and as such within juvenile court jurisdiction. But the authority of the court cannot be exercised to take the child from the mother's custody without her consent, "unless, after diligent effort has been made to avoid such separation, the same shall be found needful in order to prevent serious detriment to the welfare of such child." In such case it can be done.

Our carefully safeguarded scheme for adoption provides for a preliminary investigation and report to the court as to the suitability of the child and the proposed foster home for each other, this report to be made by the State Board of Control; and in default of a parent or duly appointed guardian the Board is authorized to act *in loco parentis* in the matter of giving consent to adoption.

I have presented this abstract of statutory provisions in order that the policy of our state in respect to illegitimate children may clearly appear. It is evident—

1. That while the natural right of the mother to her child is recognized, this right is subordinate to the welfare of the child, which when the question is raised must be determined in court.

2. That no permanent disposition of the child can lawfully be made, by the mother or any other person or agency, otherwise than through a court proceeding, and that no relatively permanent placement can be made except by an approved organization, incorporated for that purpose.

3. That no placement of the child for longer than six months can lawfully be made, by the mother or any other person or agency, without the knowledge and approval of the State Board of Control.

4. That from its birth the child is treated by the law as a *de facto* ward of the state, subject to be formally adjudicated to be such whenever brought into court, and entitled to the protective oversight of the State Board of Control, exercised directly or through the local child welfare board, both in the mother's custody and wherever else it may be placed. Unreported placement is unlawful and subject to penalty as a misdemeanor.

On paper the scheme is quite complete, but it does not always work perfectly. The chief obstacle is the attending physician and especially the family doctor. In the old days the mercenary keeper of a lying-in establishment or baby-farm was permitted to dispose of the child as though it were a vagrant puppy, while Mother Minnesota stood idly by, seemingly heedless of the fate of the helpless little one. I have personally known of children being thus turned over to drunkards and prostitutes. This, thank heaven! is gone never to return. There is little trouble with the licensed hospital or crèche. Perhaps there is some bootlegging even in this field; but certainly not much.

In specifying as the chief obstacle to the perfect working of our statutory program the physician who attends the unmarried mother in confinement, I do not intend any reflection upon the integrity of the medical profession. If there are unprincipled doctors who dispose of unwanted babies in return for an addition to their fees,

I do not now have them in mind. I am thinking of the kind and honest doctor who to prevent what he fears may be a scandal involving one of his families, or to relieve the distress of an unfortunate patient who suffers the pangs of maternity without any of its joys, and sees in her new-born child a threat of personal hardship beyond her courage to face,—who for these reasons assumes the function which the state reserves to itself, and privately places the child, directly or indirectly, for adoption in a home he believes to be a desirable one. Often, doubtless, he acts upon a friendly impulse, with little consideration. But if he stops to think is he not likely to say to himself something like this: "Why can't I do the job as well as some woman from the Child Welfare Board who never knew these people? I know the family history of the mother, either from my own observation or information from her on which I may rely; she has made me her confidant as to the father; I know the physical and psychological aspects of the case; I know the people to whom the child will go. Why expose the situation to the interference of officious outsiders?" These questions—perhaps very natural ones—I shall undertake to answer.

He ought *not* to make the placement—

1. Because of the spirit and letter of the law, which in unmistakable terms discountenances private and unsupervised placements and prescribes a different procedure, to be carried out through the state's officially responsible instrumentalities.

2. Because the welfare of the child ought to be the matter of paramount concern, to which—in the event of conflict—every other interest must give way. The moving thought in the mind of the physician is the interest of one or both of the parents, or the family connections of one or both. He does not mean to sacrifice the child, but that interest is not his first consideration.

3. The agents of the state are better equipped to choose a home for a given child, and a child for a given home, than is the doctor. I suspect that this view will not meet with universal favor among the medical profession, but I offer it as my deliberate judgment. Relatively permanent placement of children and the finding of foster homes has been for years a phase of social work which has been studied with special care. Standards have been worked out, discussed, tested and established by very intelligent and ex-

perienced groups. In Minnesota the task of applying these standards is and for many years has been in the hands of experts, with whose judgment, based upon painstaking investigation and specialized experience, the more or less casual opinion of even a wise and high-minded physician is not to be favorably compared. Child-placing is their business; it is not his. If it is not yet an acknowledged profession it is at least a highly skilled service, in which the novice—however proficient in other fields—is at a serious disadvantage. Does not the sense of propriety which has formulated a strict code of ethics to govern the relations of physicians among themselves, suggest that the legally defined province of the social worker ought not to be invaded?

4. If private placement is countenanced by high-grade physicians, it will certainly be practiced with increasing boldness and frequency by less conscientious members of the medical profession, to whom obviously it would be unsafe to delegate so important a function. What confidence can be placed in a wise choice of future parents when made by a physician whose standards of professional integrity permit him to begin his project with a false birth certificate,—a situation too frequently encountered in adoption proceedings?

I should be less than frank if I ignored a comment which quite naturally might be made by one familiar with the subject: There can be no adoption without a court proceeding, and there is opportunity then for an expert inquiry into the mutual fitness of home and child. The physician's placement is therefore subject to approval or disapproval by the constituted authorities. Is that not enough? No, for several reasons. The placement is sometimes in another state, and in that event Minnesota has no control of the situation. Even within the state there is no assured supervision of the child in the home, and much harm might occur, in the event of an unwise choice, before adoption proceedings are begun. The proposed foster parents may decide they do not wish to keep the child and all sorts of complications may result from this decision, in the midst of which the child is without an authorized protector. They may decide to keep the child without adoption, thus leaving him in an extremely disadvantageous status, as compared with what he would have had if suitably

adopted. It is of great importance to the child that if possible the home in which he is placed otherwise than for temporary care shall be the one into which he is later to be adopted. And when this is not possible, he should at least have his legal right of protective supervision by the state.

A point too frequently overlooked by physicians is that the policy of our state, for excellent reasons which I cannot now enlarge upon, favors the judicial establishment of paternity. This, in appropriate cases, is one of the functions of the local child welfare board, and it is often greatly hindered by premature and unreported placement. My experience satisfies me that there is little danger of the institution of proceedings ill-advisedly.

Again, the question whether a mother ought to keep and rear her child, or at least carry a share of responsibility for him while his future is being wisely planned, is sometimes of great importance to the mother, the child and the community. Private placement, which to fulfill its purpose must occur very quickly after birth, tends to forestall a deliberate answer to this question.

The interests of the foster home also call for careful deliberation and skillful guidance. Tragic situations arise when foster parents who have learned to love with truly parental fervency the child who has been committed to their care, find that he develops physical or mental defects, not susceptible of determination at birth or directly afterward, that disqualify him for their home. And sometimes a mother who has given to a private placement consent that has no legal sanction, changes her mind. Then follow confusion and distress, with inevitable disadvantage to the child.

The charter of children's rights put forth by the White House Conference of 1930, doubtless the most expert gathering of champions of childhood ever assembled, bespeaks "for every child a home and that love and security which a home provides; and for that child who must receive foster care, the nearest substitute for his own home." The laws of Minnesota seek, with wisdom and humanity, the fulfillment of this ideal. They should be faithfully obeyed. Placement of the child born out of wedlock is in Minnesota an exclusive public function.

To this conclusion there is an important cor-

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ollary. When the State of Minnesota delegates to agencies of its own selection the vitally important task we are considering, no less than the utmost care should be taken to see that it is performed not only with good judgment, skill, and paramount concern for the welfare of the child, but with delicacy, tact, sympathy and due regard for all the collateral interests involved. Boards and organizations must work through individ-

uals, who should be on their guard against a merely official attitude, and should never forget that they are human beings, dealing with the most intimate affairs of other human beings. In this field resentments are easily aroused and are likely to do much harm. "Friendly coöperation" should be the watchword; and here the physician may be—and is when there is mutual understanding—a most valuable ally.

ANGINA PECTORIS: MEDICAL TREATMENT*

HENRY L. ULRICH, M.D.
Minneapolis

IN opening the discussion of the treatment of this syndrome, I realize that every member of this Society is well versed in the use of the medicaments employed and in the individual variation of management, including prophylaxis, in any given case.

Assuming that the symptoms of angina are always due to an anoxemia of some portion of the heart muscle, the avoidance of this anoxemia is the primary requisite. The management of this, of course, depends on the individual case and its underlying pathology. All anoxemias of the heart must depend on faulty blood supply. The fault may be functional or organic. The functional deficiencies may be due to disproportion of muscle mass and aortic pressure, such as seen in some hypertensions, or due to a failing heart and an inadequate sinusoidal system¹ or again to anemia. The organic is due to disease of the coronaries, including aortic changes or valvular changes which may affect coronary pressure or occlude coronary orifices. The group due to muscle changes, such as scarring or fibrosis, are primarily coronary and can be included in the coronary group. Besides this there must be some nerve complex or "anlage" involved in the mechanism. All clinicians have emphasized the familial and racial variations back of this neurosis factor. The acquisition of tissue habits is lost sight of in our discussions of various syndromes. How a neurosis is grafted onto what may have

been an accidental anoxemia is still not clear in the complex, but is strikingly evident in some veterans of anginal attacks.

With the introduction of the use of nitrites in angina pectoris by Lauder Brunton, it was long considered that the fall in blood pressure due to the peripheral dilatation was the instance which gave relief. The pharmacologic action of this interesting group of drugs has been enhanced considerably since his day. Of course we now know that their action in relieving pain is due to increased coronary flow, which permits a better metabolism in the site which instigates the attack. No better visible demonstration of this is afforded than the experiments of Fred Smith² of Iowa City ten years ago, working at that time in Chicago. Smith ligated a distal branch of the left coronary, gave his dogs nitroglycerine intraventricularly and saw the blanch area improve in color. He rightly assumed this was due to the dilatation of the collateral vessels. In dogs with poor collaterals no such change of color occurred.

The time of dilatation of the vessels after the use of nitrites varies in different parts of the arterial tree. The vessels of the skin of the upper part of the body, the meninges, the heart, and splanchnic area, dilate in the order named.

Wallace and Ringer³ in 1909 gave the time in which various members of this group produce a fall in pressure as follows:

1. Amyl nitrite	3 mins. inhalation	3 minutes
2. Sodium nitrite	1 gr. in sol. by mouth	25 minutes
3. Nitroglycerine	1.5 mins. 1% solution by mouth	8 minutes
4. Erythrol tetranitrate	1.5 gr. in chocolate tablet	32 minutes

*Delivered as part of the Symposium on Angina Pectoris at the meeting of the Minnesota Society of Internal Medicine, Nov. 9, 1931.

It has also been noticed that the faster the action, the shorter the length of time the pressure remains low.

The question of tolerance and cross tolerance to this interesting group has very recently been discussed by Crandall, Leake, Loevenhart and Muehlberger⁴ of Wisconsin. Stewart⁵ has previously reported a tolerance for 1 min. of a 1 per cent solution of nitroglycerine to 16 min. of a 10 per cent solution in 6 months. Laws⁶ and Ebright⁷ have demonstrated tolerance to nitroglycerine in workers in dynamite factories. Mathews⁸ observed tolerance to nitroglycerine but none in patients given erythrol trinitrate, mannitol hexanitrate or to sodium nitrite.

TABLE 1

(Crandall, Leake, Loevenhart and Muehlberger)
Time required for production of tolerance to headache effects of one headache dose

Substance	Route	Total Time hours
Sodium nitrite.....	Oral	No tolerance
Erythrol tetranitrate.....	Oral	60
Glyceryl trinitrate.....	Skin absorption	38
Ethylene glycol dinitrate.....	Skin absorption	32
Methyl nitrate.....	Inhalation	24
Amyl nitrite.....	Inhalation	2-3

TABLE 2

(Crandall, Leake, Loevenhart and Muehlberger)
Amounts of "nitrites" required for production of tolerance to headache effects of one headache dose, calculated on the basis of one headache dose glyceryl trinitrate = 10 mgm.

Substance	Route	Amount mgm.
Sodium nitrite.....	Oral	No tolerance
Erythrol tetranitrate.....	Oral	216
Glyceryl trinitrate.....	Skin absorption	52
Ethylene glycol dinitrate.....	Skin absorption	160
Methyl nitrate.....	Inhalation	Not measured
Amyl nitrite.....	Inhalation	102

They observed that cross tolerance from one for the other of the group is easily obtained. Tolerance to sodium nitrite is obtained, but sodium nitrite develops no tolerance for the others.

The time required to develop tolerance to a given ester is remarkably constant. The amount of ester taken during the production of tolerance varies with the individual. The higher headache dose required, the larger amount needed for development of tolerance. The evidence for tolerance points to some chemical factor. Physiological habit is not the answer since these people all responded to histamine. Tolerance could be kept up by using one headache dose a day. Tolerance to headache is more easily established than tolerance to blood pressure and pulse variations.

The toxicity of glyceryl trinitrates and sodium

nitrite has been reported from the same laboratory by Oltmann and Crandall.⁹ Rabbits injected intravenously with these two drugs invariably died by the use of 45 mgm. of nitroglycerine per kilo of rabbit and 80-90 mgm. of sodium nitrite per kilo of rabbit. In the former, death ensued in 20 minutes; in the latter, in a little over an hour's time. The death was one of asphyxia.

The difference in lethal dose indicates that the nitrite ion in nitroglycerine is not wholly responsible for the toxic effect. Assuming that the same type of hydrolysis occurs in the body as in vitro, 27.3 mgm. of sodium nitrite liberates as many nitrite ions as does the lethal dose of nitroglycerine. The lethal dose of sodium nitrite is approximately three times as large as would be expected if both compounds acted only by the liberation of nitrite ions. The asphyxia is either due to fall of blood pressure or to the formation of methemoglobin. Haldane was enabled to protect mice against the lethal dose by keeping his animals in an air oxygen chamber. "It is probable that other factors enter into the cause of death by these substances but evidence would go to show that asphyxiation is at least one of the more important causes."

A paper presented by Sturgiss, of Providence, Rhode Island, before the American College of Physicians last March (1931) and published in the *Annals of Medicine* should be read by all students of the use of nitrites. He summarizes his observations as follows (he is discussing "The Reaction to Nitrites on the Anginal Syndrome and Arterial Hypertension"):

1. "Except for a very transient fall in blood pressure after amyl nitrite, neither it, nor nitroglycerine, when used in the usual therapeutic doses, causes any consistent blood pressure changes in normal human beings or in persons with arterial hypertension with or without severe renal damage or retinal arteriolar sclerosis.

2. "The fall occurring after the use of amyl nitrite is so rapid and transitory and so independent of subjective symptoms that it is impossible to measure it accurately by taking blood pressure determinations in the ordinary way. This fact greatly decreases its usefulness in estimating the prognosis in arterial hypertension.*

3. "In persons suffering from attacks of an-

*The last sentence is a refutation of an assumption made by Steigltz, E. J., *Arch. of Int. Med.*, 1930, xlii, 227, who thinks that by means of nitrites a prognosis in hypertension can be established.

gina pectoris of the usual ambulatory type, a rapid fall in systolic and diastolic pressure takes place after the use of these drugs.

4. "The pain relief which occurs in these cases of ambulatory angina is independent of the pressure levels and therefore independent of the action of the nitrites on the peripheral vessels but due to their action in increasing coronary circulation."

The prevention of anoxemia in a progressive condition is the dilemma in which we find ourselves continually in the management of the syndrome, for which reason the slower acting nitrites have been used for years. The difficulties encountered in their use have been hinted at under the discussion of tolerance and toxicity. I have seen nothing in the literature relating to studies in methemoglobinemia in anginal cases.

Of late years the vegetable purins or xanthin bodies have had vogue in combating the anoxemia. Beginning with caffein, theobromin and its derivatives, theocin and its modifications, particularly ephyllin, have been much vaunted. The experimental evidence is that theobromin and theocin and their derivatives dilate the coronaries. This has been demonstrated on cats and rabbits usually in the heart-lung preparation or the perfused heart. Clinically they have had a measure of success. The selection of the case by trial and error is our only means as yet to judge their use.

Wedd,¹⁰ working in Cambridge, recently reports adenosine is a most powerful dilator of the coronaries in the perfused heart of the rabbit. The dilatation is independent of rate and action of the heart muscle. It is about twenty times more powerful a dilator than is sodium nitrite, not only in dilating normal vessels but also those which have been constricted by pitressin or barium chloride. The hearts of animals suffering from hypervitaminosis due to feeding an excess of Vitamin D showed an enormous reactivity to adenosine, expressed by a tendency to become more reactive in a state of dilatation much earlier than did the vessels of normal hearts. The type of reaction could not be correlated with histological changes.

Adenosine is a pyrimidin glucoside made from yeast nucleic acid. It is related to adenylic acid and guanosine. All three are liberated just like histamin in tissue injury. However, they differ from histamin in not producing wheals on intra-

dermal injection. Adenosine practically duplicated the action of amyl nitrite. Unfortunately, it has besides this an action on the conduction system and muscle cell of the heart which precludes its use as a coronary dilator.¹¹ I have seen no reports on its use in angina pectoris.

Glycocyamine, worked out by Major of Kan-City as a depressor of blood pressure, has been shown to increase coronary flow experimentally.¹² Glycocyamine is a guanadin acetic acid and closely resembles creatin, from which it differs in having no methyl group. I have seen no reports on its use in angina pectoris.

Since the days of Heberden, alcohol has been used to prevent and relieve attacks of angina. How alcohol acts is still a mystery. That it is still a drug to conjure with cannot be denied. I am favorably impressed by its action in the group of milder cases.

Up to now we have attempted to improve coronary flow by means of pharmacologic methods. Recently two other methods have been used to relieve pain and prevent attacks which approach physiological processes. The use of oxygen in the familiar oxygen chamber or tent, or even the nasal catheter method, has been used by Barach¹³ of New York City. Barach reports the treatment of three cases of rather severe coronary disease and chronic pain by this means. They were kept in tents for periods of ten days to two weeks. One received supplemental nasal catheter inhalations for eight hours a day for six weeks. Pain was relieved and the attacks were minimized.

The mechanism which relieves pain in this syndrome or following coronary occlusion is not clear. I trust Dr. Rizer,¹⁴ who has treated twenty-eight cases of coronary occlusion by means of oxygen, which tell us about his experiences. Barach states in his blood gas studies that he was enabled to raise the arterial saturation from 95 to 99 per cent. "Although this represents a small increase in per cent saturation it indicates a very considerable rise in the tension or partial pressure of oxygen available to the tissues." This may be the reason for the relief of the local anoxemia in the heart muscle. Further in his discussion of the rôle of oxygen in the treatment of cardiac decompensation, he notes that his blood gas studies indicated a marked rise in CO₂ in the arterial blood. Is it not possible that the use of CO₂ in the arterial blood locally may act as a vasodilator and re-

laxer of cardiac muscle, thus adding its influence to the factor of increase of partial pressure of oxygen in the relief of pain?

A better understanding of this point is afforded by the discussion of Yandel Henderson's suggestion¹⁵ of the use of CO₂ in the treatment of angina pectoris. He calls attention to the need of CO₂ in the perfusates in heart preparations in order to prevent tetany; to the dilatation of the skin vessels after hyperventilation by means of CO₂. It is his opinion the good results of Nauheim baths in heart disease were probably due to the inhalation of the CO₂ volatilized from the water rather than the stimulation effect on the skin.

By means of an open face mask a slight degree of hyperventilation is obtained by means of a 5 to 7 per cent CO₂ mixture with air. The usual hyperventilation apparatus can be used for this. He claims pain can be relieved, and by daily use the same reaction in the tissue vessels can be induced as is brought about in the healthy person by a walk. In his theoretical consideration, he makes these points. In a given acting muscle if the oxygen supply is adequate the accumulating waste products are burned to CO₂. The excess of lactic acid and deficiency of CO₂ in a poorly-nourished muscle produces ischemia and cramp. CO₂ is a powerful relaxer of muscles. A muscle to function properly must be able to relax as well as contract. Hence CO₂ (quoting Miescher) "spreads its protective wings over the oxygen supply of the body." A patient inhaling CO₂ at regular intervals for fifteen to twenty minutes is providing himself with a reaction which daily exercise gives to the normal individual. He develops increased local capacity for strain and normal behavior. His tissues lose a "habit." Henderson has had experience with three cases of angina. His conclusion is "that daily inhalation of CO₂ appears to offer a possibility of considerable amelioration of the crippling effects and suffering in cases of angina pectoris and also intermittent claudication."

In one case treated by this regime in Minneapolis, no success was obtained. This may be due to its advanced condition and an exquisitely sensitive neuromuscular arc.

Why do we fail in certain cases?

1. The possibility of an exquisite nervous arc. The only drug which will control this is morphin.

2. The impossible adjustment between the progression of sclerosis and compensatory growth of collateral circulation.

3. The possibility of a factor in the sinusoidal system.¹

Based, as is this syndrome, on a progressive feature the prognosis is extremely variable. Instances of death in the first attack to instances of persons living twenty-five to thirty years after their first attack, are on record. Herrick¹⁶ in 1916 gave the average length of life after the first attack as 3 years; MacKenzie¹⁷ in 1923, as 5.4 years; and Paul White¹⁸ in his recent Monograph on the Heart, as 4.6 years. There are individuals who outlive the syndrome. The possible explanation for this is that they have hearts which have developed an adequate collateral circulation.

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MORE FALLACIES IN THE TREATMENT OF RECTAL DISEASE

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ALTHOUGH the origin of the method of treating piles by injection is more or less dimmed by antiquity, it is said to have been devised by a blacksmith. It is perhaps with a laudable attempt at a revival of the old days of craftsmanship wherein each man was so skilled in the arts as to be sufficient unto himself that the flame of scientific interest is being kindled in the minds of not only osteopaths and chiropractors, but (sic!) dentists as well. Possibly too wide a diffusion of proctologic knowledge has the same effect as the spreading rays of the late afternoon sun in mid-winter when it so happens that no one area gets enough of the beneficent rays to do any good. At any rate . . .

Each time the good Dr. Brady reveals to the panting proletariat the mysteries of the injection treatment of hemorrhoids he takes his final bow with the good-natured remark that any good doctor can furnish the above-named treatment. I frequently find myself—perhaps unwillingly—agreeing with this oracle of medical wisdom; possibly equally as often I am conscious of a slight feeling of skepticism, while occasionally I take violent exception to his opinions. His statement that any good doctor can inject piles stands without challenge, provided, of course, that it be recognized that no one ever was capable of doing it by pure instinct, as a cat swims when tossed into the water, but only by learning what to inject, when to do it, and what to do with. Increasingly of late I have been seeing cases in which the hapless sufferer has been injected, sometimes apparently with harshly irritant solutions, all along the route from a point one and a half inches external to the anal orifice, to the

level of the recto-sigmoid junction. Obviously, to accept a fee for such treatment is *schrecklich*. In the manner of Samuel Johnson's comment on the woman preacher, the surprising thing about it is not that it is done badly (one expects that) but it is remarkable that one does it at all . . . without bothering to learn how. I still agree with Dr. Brady when he says that any good doctor *can* inject piles.

It may seem superfluous to repeat what has been said so often on this subject, but experience proves that the advice has not been completely assimilated, and that is, that *only internal hemorrhoids are to be treated by injection*. Having gotten this axiom firmly fixed in mind, the next requisite is the ability to differentiate one type of pile from another. This should not be an insurmountable difficulty, but again, appearances are to the contrary.

If one recalls the embryological development of the rectum he will doubtless remember that the rectum is formed by a prolongation and pushing down of the blind hind-gut, while the anus is made up of the inpouching of the proctodeum. In the embryo the hind-gut and the proctodeum advance toward one another, finally breaking through the septum and coalescing to form a continuous tube. The point where the epi- and hypoblastic layers meet, the junction between body-wall and viscera, is known as the pectinate line. This extremely important landmark defines the distal boundary of the intestinal canal and is the dividing line between the internal and external sphincters. Internal to it is columnar epithelium, while below, or distal to it, the epithelium is squamous in type. Above the pecti-

nate line the superior hemorrhoidal artery supplies the rectal mucosa, below it the blood-supply comes from the inferior hemorrhoidal. This line divides the caval and portal circulation. The lymphatics on the distal side drain into the inguinal nodes; those on the proximal side into the sacral and lumbar nodes. Tactile corpuscles are only found distal to the pectinate line, hence the lack of pain on injecting the mucosa immediately above it. This importance of this region can not be over-estimated from a proctologic standpoint since probably 80 per cent of the troubles seen by a proctologist are along the pectinate line.

After a little experience and study one is able to distinguish the various anatomical and pathological structures which occur here, and to make a proper evaluation of their importance. The line may be identified by the anal papillæ, the distal ends of the columns of Morgagni, the distal extremities of the anal crypts between the columns, and the type of epithelium. *Injection of hemorrhoids must be made proximal to the pectinate line.*

Even if one is not yet sufficiently familiar with the normal anatomy of the anal canal to make out these smaller landmarks, he may always distinguish the internal from the external pile by the fact that the former is covered with soft, reddish, velvety, moist mucosa (columnar epithelium), whether the pile happens to be inside the anal canal or outside, while the external variety is covered with skin or transitional mucosa.

If the above appears unnecessarily detailed let me say that recently I saw a patient who had received two injections into the center of a tremendously thrombosed external hemorrhoid. Needless to say, this treatment failed to contribute in any great degree to his peace of mind. Another patient had three injections which resulted in fairly large ulcers in the rectal wall at a point four or five inches above the sphincter. It so happened that I had seen this particular gentleman some six months before and informed him—albeit sadly—that he had no piles, but persistence won out, and he finally succeeded in getting treatment. A third patient had the smooth, non-ulcerated and nodular margin of an undiagnosed carcinoma of the ampulla injected several times. In a procedure that is as easy to learn as the injection of piles this sort of thing is hardly excusable. The time has passed when sur-

gical experience must needs be gained by main strength and awkwardness.

A part of the difficulties encountered has been from the use of improper solutions, or the incorrect use of satisfactory solutions, although I believe that the trouble from this source is likely to be a minimum. Montague in his "Modern Treatment of Hemorrhoids" lists some thirteen or more solutions, most of which utilize phenol as the active agent. Phenol solutions in proper strengths are used throughout the country by all proctologists, and are safe in experienced hands. In my own work I have continued to use quinine and urea hydrochloride in a 5 per cent dilution, except in the occasional refractory case, when I make use of one of the carbolic acid preparations. I am convinced that quinine and urea hydrochloride is the safest solution for the beginner or the occasional user, since one rarely has trouble from the solution *per se* when employing this material. The amount to be used varies with the size of the hemorrhoid being injected, from 0.5 to 1.5 cubic centimeters. Again quoting Dr. Brady, any good doctor can successfully inject hemorrhoids . . . if he learns how, and this should not take long nor require any great effort.

The second topic which I wish to discuss briefly is that of carcinoma of the rectum and its oftener-than-not attendant colostomy. I presume that if asked whether or not they would submit to a colostomy in the event of their being unfortunate enough as to have a rectal cancer, eight out of ten doctors would reply in the negative. To me this is in some ways an extremely curious reaction. It is, of course, a typical example of entirely biased judgment, and should be accepted as such. Naturally an individual in the perfect glow of health, a doctor on the way to the golf links, a person who is in the habit of occupying his spare time with more or less athletic diversion, looks with some repugnance on what would appear at first thought to be a nuisance,—an anus in an unusual location. For after all, that is all a colostomy is,—an anus somewhere else.

Put the doctor in the position of the cancer patient, who has a painful, ulcerating, bleeding, partially obstructing growth, and who has ahead of him nothing other than months of suffering, and I venture to say he will choose the lesser of two evils, if colostomy must be termed an evil.

It is all very well to be dogmatic concerning someone else's carcinoma. The unsavory reputation which has become attached to a permanent colostomy is due, I believe, to several factors. First, as has been noted above, a natural, first-thought dislike for an unnaturally placed anus; secondly, indifference on the part of the attendant surgeon after the colostomy has been made, with the result that the patient is finally forced to make use of whatever ingenuity he might have in finding the way out of the minor difficulties surrounding his hygiene, usually ending up with some makeshift appliance of home manufacture; third, a lack, in the profession in this vicinity, of acquaintance with what has seemed to me a thoroughly satisfactory colostomy appliance.

A colostomy retainer of any type functions satisfactorily only when the stools are moderately formed, since nothing so far has been devised which will retain, for any length of time, a liquid stool. Thus the matter of keeping the bowels slightly constipated is important in the use of the belt under discussion. The appliance we have been using for six years has proven satisfactory from all standpoints. It is constructed of a wide strip of elastic material five or six inches in width, adjustable, and which fastens by means of "lift-the-dot" fasteners to a light metal plate which has an opening in the center. A canvas "hat" with a stiff brim and a soft, collapsible crown is slipped through the opening in the plate with the stiff brim between the plate and the abdominal wall. The brim holds the hat, or bag in position while the crown pouches out through the opening in the plate where it lies collapsed and flat until needed to retain the stool. The hat is first lined with paper which is waxed, then with absorbent paper, and then placed over the stoma, where the pressure of the clothing keeps it flattened out and invisible through the clothing. The entire belt is washable, and may be sterilized by boiling, there being no rubber parts to deteriorate. The cost is in the neighborhood of seven dollars.*

I am certain that the inconvenience resulting from a permanent colostomy is greatly exaggerated in the minds of many physicians. Lockhart-Mummery¹ says: "The best way to estimate the disability of patients operated upon for

rectal cancer is in reference to the wage-earning capacity. We feel that this is not diminished except in the case of very heavy labor involving strenuous exertion. The majority of the patients (in his list) were still in the same employment as formerly; thus out of twenty cases apparently cured by operation, six were women, five of whom did their own housework, one was a stationer's assistant. There were fourteen men, of whom ten were in full work in the following occupations: printer's cutter, fish-curer, tailor, packer, schoolmaster, pilot, messenger, waiter, plate-layer, and odd-job man. Three were living in retirement, being over sixty-five years of age."

The same author² says: "The disability (colostomy) is not a serious one, in fact not nearly so serious as might well be imagined. Patients are able to live comfortable and useful lives, and after the first few months it is remarkable how little inconvenience the colostomy causes."

In discussing the various types of colostomies Rankin³ says: "The fact that practically any type of stoma may be attended to easily so long as the bowels remain constipated renders the results of colostomy satisfactory in the majority of cases."

Daniel F. Jones⁴ states: "After seeing a large number of patients with colostomies, we have been convinced that they can and do live happy and contented lives and do their usual work. A colostomy gives them the best possible chance for life and for a permanent cure."

As to the skepticism regarding the treatment of cancer of the rectum by radical excision and permanent colostomy, and the dubious outlook shared in by so many physicians toward its cure, I repeat what Yeomans says, that in the present state of knowledge of the therapy of intestinal carcinoma, it may be stated as an axiom that the removal of the growth by radical surgery is indicated in all operable cases, and irradiation in all inoperable cases.

The surgeon is going to continue to be hopelessly hampered in the treatment of this condition unless he has the coöperation of the physician, and if the physician is not on the lookout for early cancer, and if he does not believe in the efficacy of its radical treatment in those cases requiring it, it is quite obvious that a large number of unfortunates are going to die each year

*The belt described is made by John F. Greer, 2242 Telegraph Ave., Oakland, Calif.

from carcinoma of the rectum, whose lives might otherwise be saved or lengthened indefinitely.

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RADICAL SINUS EXENTERATION IN PANSINUSITIS*

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FIFTY patients with a diagnosis of pansinusitis were operated on with a complete exenteration of the nasal sinuses, first opening into the antrum through the cheek, as in a Caldwell-Luc operation, and then through the roof of the antrum into the ethmoids, frontal and sphenoid, removing the entire floor of these cells and very thoroughly curetting the frontal, ethmoid and sphenoid cells. The bony wall between the nares and antrum was also removed, leaving the middle and inferior turbinates as two ribbons or bands stretching across between the nasal cavity and the antral cavity. Hypertrophied turbinates, especially the inferior turbinate, can be made smaller by biting off along the previously attached portion of the turbinate. This operation¹ was first performed by Uffenarde in 1912, who found he was not able to prevent the reformation of polypi after a complete intranasal ethmoid exenteration. Also, the external ethmoid and frontal exenteration did not stop the recurrence of polypi, but by attacking the ethmoids through the antrum he was able to stop their recurrence. This operation is also performed by Sewall² of Stanford University, who advises first performing such operations as tonsillectomy and septum removal, and then waiting quite some time before attacking the sinuses, as many cases will then clear up. My previous check-up by questionnaires on the results of septum resection has shown that 42 per cent will respond to septal resection alone.⁴

An analysis of fifty cases of pansinusitis submitted to the Caldwell-Luc and ethmoid opera-

tion as above described was made, the operation having been performed three years or more ago, thus allowing for considerable time to have elapsed in order to check the end-results.

Of the fifty cases, twenty-nine were recorded as cured, eighteen improved, and three not improved. None was made worse.

ANALYSIS ACCORDING TO SYMPTOMS

Discharge.—Of twenty-one patients with this as a major complaint, eleven were recorded as cured, eight as improved, and two as not improved.

Nasal Blockage.—Of eleven cases of polypi, there was no recurrence following operation. In fourteen cases with blockage from other factors than polypi, thirteen were recorded as improved, and one not benefited. However, many of these cases also had septal resections, especially where there was any marked deviation of the septum.

Focal Infection.—Eleven patients were operated upon primarily to benefit some condition dependent on an infection focus as a causative agent. Of this number ten showed some degree of improvement, and one showed no improvement.

Bronchiectasis.—All of the four patients reported some improvement. One improved very much with lipiodol treatments following the operation. Another improved much after pneumothorax collapse therapy.

Bronchitis.—Two of the four cases, of rather mild degree, were cured, and two were improved.

Asthma.—In all of the five cases nasal symptoms were improved. One patient was cured. One was very greatly improved, handling dusty

*From the Duluth Clinic. Read at meeting of Minnesota Academy of Ophthalmology and Otolaryngology, April 8, 1932.

may only giving him any difficulty. Two patients felt that they were some better. One, who did not have any nasal symptoms, although the sinuses were all crowded with polypi which had not as yet protruded into the nasal cavity, was not improved. Follow-up treatment with vaccines, lipiodol, etc., will greatly help many of these.

Emphysema.—One patient was very greatly benefited and two much improved by the operation.

Headache.—There were ten patients in all who complained of headaches of some degree. Of this number six were relieved completely, three were improved, and one reported still an occasional headache.

Of the fifty patients, nine had had previous nasal operations, two having had a Caldwell-Luc operation with no benefit. Three had had tooth extractions, but the other sinuses were also diseased, and three of the patients complained of some local pain in the cheek.

CONCLUSIONS

When the disease is confined to the sinuses the results of the operation are very good. Where there is a complicating bronchitis of not too long standing, or too much pathology has not already developed in the bronchial tree, the results are also gratifying. In cases of bronchiectasis improvement is more likely in conjunction with lipiodol injection. Vaccines, drugs, climate, etc., are quite important.

Asthma itself may not be much influenced, but the nose is made much more comfortable. Here, follow-up treatment is very essential. This operation seems to completely cure polypi, as in no case in this small series has there been the recurrence which usually follows other methods of polyp removal or sinus operations. The exception, of course, are the primary polypi, which arise from the middle turbinate or furrows in the middle turbinate, and which are cured by simple removal. Polypi arising from a sinus are called secondary polypi, being secondary to an in-

fection in that sinus, usually of the serous catarrhal type. Empyema of a sinus is not usually followed by polyps.

The advantages of this type of operation are as follows:

1. The complete operation is performed at one sitting, thus eliminating the necessity of repeated curetting of the ethmoids sometimes required after the operation by the intranasal route. This is of economic importance, especially to patients coming from a distance.

2. A full view and inspection is possible of the entire ethmoid labyrinth and sphenoid sinuses and even into the frontals to some extent, so that thorough removal of all polyps and necrotic tissue can be accomplished.

3. One large sinus cavity of the antrum, ethmoid, frontal and sphenoid sinuses is created on each side, providing a very complete drainage and ventilation for any acute infection that may subsequently develop.

4. While this operation may seem like a formidable procedure, it is not in the least mutilating. The intranasal appearance of the nose, including the turbinates and septum is all perfectly normal. None of the patients have complained of any dryness, crusting or discomfort from the inhalation of cold air.

5. The advisability of caring for the chronic cases of pansinusitis before bronchiectasis, asthma, or other serious complications develop, is imperative, if the best results are to be obtained from the operation.

6. This operation is advised for cases only of pansinusitis with extensive involvement, where simpler methods of treatment are not indicated.

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LIPIODOL AS A THERAPEUTIC AGENT IN ASTHMA

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THE instillation of lipiodol into the tracheo-bronchial tree as a diagnostic procedure is well known and its value in confirming clinical chest findings is well recognized. The value of lipiodol, however, as a therapeutic agent in the treatment of bronchial inflammations is apparently appreciated by few.

For the past two and one-half years I have been using lipiodol as a routine therapeutic procedure in the treatment of chronic cough, bronchitis, bronchiectasis and asthma, excepting in such patients as exhibited a contraindication to the iodine content of the oil. Ochsner in 1929 reported his observations in a large number of patients suffering with chronic bronchitis and bronchiectasis and his reports of the marked improvement in their clinical symptoms following the introduction of lipiodol have been borne out in my series. The case histories which I report in this paper are those of patients whose chief complaint was the phenomena exhibited in asthmatic attacks.

Subacute and chronic affections of the bronchi are frequently encountered and the treatment is often unsatisfactory. This unsuccessful treatment is not surprising in view of the fact that little if any direct treatment of the bronchial mucous membrane has been attempted. Bronchography offers a method of direct treatment and the improvement in the clinical symptoms following the introduction of lipiodol into the bronchial tree impresses one with the therapeutic possibilities of this form of treatment.

In bronchitis and bronchiectasis I found the instillation of lipiodol to be of unquestionable value. The improvement in the clinical symptoms manifested itself by decreased cough, decreased sputum, disappearance of the foul odor, and increase in weight.

The improvement in the clinical symptoms of a patient suffering from bronchitis following bronchography varies to some extent, depending a great deal upon the duration of the disease and the extent of the pathological change in the bronchial walls. My observations would indicate that in those patients where the disease has been

of comparatively short duration there is more likelihood of prompt relief, while those who have suffered for years require repeated instillations.

The subacute cases may have as the only symptom a chronic cough, bronchography showing no dilatation of the bronchi and the chest findings being negative. Two of my series were of this type and both obtained prompt relief from one instillation. It is usual, however, to have more or less definite chest indications and slight dilatation of the bronchi revealed in bronchography. Nevertheless, the fact that cough is so often the only symptom warrants the instillation of iodized oil in spite of negative physical findings. Ochsner has reported finding dilatation of the bronchi on the first instillation and absence of it on repeated instillations. He classifies this type as functional. I have not observed this phenomenon.

The chronic cases differ from the acute in that the pathological change in the bronchial walls is more extensive. It is to be expected that the improvement obtained would be in proportion to the degree of these changes. This I found to be true. The amount of relief attained is variable in degree and duration. For this reason no set routine can be established by arbitrarily fixing the time of the next treatment. This is an individual factor and depends upon the character of the bronchial changes. It is my procedure to allow the patient to follow his own inclinations in the matter. It is better, however, to keep in touch with him for the first month to learn the effect of the instillation. If no improvement is obtained, relief is often obtained by a second filling. It is not to be expected that one or two treatments will effect permanent relief. It does not eradicate the disease but only improves the symptoms. In bronchiectasis the improvement is not so satisfactory. There is, however, a sterilization of the cavities and consequent decrease of the foul odor.

Probably the most interesting cases in my series were those in which the asthmatic phenomena played a prominent part.

These cases are presented simply to call atten-

tion to a therapeutic procedure which may prove useful in the treatment of bronchial asthma when all demonstrable etiologic factors have been eliminated and other procedures have failed. The number of cases observed is too few to definitely fix the therapeutic value of lipiodol in the treatment of bronchial asthma but in view of the results obtained it promises to establish a definite place for itself.

Due to the fact that concrete data concerning the cause of bronchial asthma are lacking, it is difficult to explain the specific action of the lipiodol. In spite of assertions to the effect that lipiodol is not broken down and therefore no iodine effect could be produced, it is probable that its action is upon the membrane itself and is not concerned with any reflex adjustments. One must suspect, however, after frequently noting the disappearance of foul odors that it has some sterilizing attribute. Whether this is due to a slow evolution of iodine or some other factor is difficult to say. It has been demonstrated that the urine shows constant traces of iodine as long as lipiodol is present in the tracheobronchial tree. Whatever the mechanism, it is probably similar to its action in bronchitis. Jackson, who has examined, bronchoscopically, asthmatic patients both during attacks and between attacks, calls attention to the fact that many of these patients have a chronic tracheobronchitis. It is possible that the benefit derived is due to the action of the lipiodol on the chronically inflamed membrane.

Robertson gives the following interesting explanation of the probable action of lipiodol: "It is known that iodine is used chemically to determine the so-called iodine number by virtue of its chemical affinity with the fats. Its use internally in the body may possibly be explained on this basis since we know that protease is mobilized only when fatty acids are linked up and not free. Iodine may unite with fatty acids and liberate protease, thereby producing a beneficial action in that the undesirable necrotic or destroyed proteins are gotten rid of as exudates and the fibrin is better able to perform its function of healing. Lipiodol may exert its beneficial action in the bronchi by virtue of the liberation of nascent iodine, which in turn may improve locally the condition of the bronchial and bronchiolar walls with which it comes into contact."

For this reason lipiodol at present must be considered as an adjunct in the treatment of bron-

chial asthma. That it may have a specific effect and can be used routinely in all types remains to be seen. Many more patients must be observed before one can say whether or not it will help those asthmatics not having the complication of a chronic bronchitis. Its use is indicated in those cases of bronchial asthma which have been carefully studied from all standpoints, especially as to hypersensitiveness, focal infections (particularly those located in the nasal accessory sinuses), cardiac and renal disease, and other organic conditions, and have not responded to treatment.

Lipiodol can be introduced into the tracheobronchial tree by several different methods. Essentially there are but two: the bronchoscopic, which is probably the most accurate and satisfactory; and the procedures which allow the lipiodol to flow into the bronchial tree through laryngeal instillation. Various procedures are used in this latter group but all are based on laryngeal introduction.

Bronchoscopic instillation possesses distinct advantages in many cases. First, it can be employed irrespective of the patient's age. Laryngeal instillation in the young presents problems which are difficult to overcome. Second, it allows the medication to be accurately placed in any region of the bronchial tree which presents clinical signs. This advantage, however, is more apparent in diagnostic instillations than in the therapeutic. It is surprising how readily the lipiodol can be made to enter a particular branch bronchus when the correct technic is used in the passive instillation. Third, it enables one to properly anesthetize the mucous membrane of the tracheobronchial tree and thereby lessen the irritative effect of the medication which is often present following the instillation. Fourth, the bronchoscope allows the removal of secretions preliminary to the introduction of the oil. This is a very important and distinct advantage and the demonstration of secretions definitely indicates its use. These secretions are often of a purulent type but for the most part are mucoid in character and are often very tenacious. Medication is apt to produce little effect if the smaller bronchi are plugged. It has been demonstrated that the removal of such secretions often materially benefits the asthmatic patient.

When laryngeal instillation is employed, I have found the passive method the most satisfactory.

It is not complex, is quickly done, and is efficient. Repetition of the procedure at frequent intervals is not viewed with alarm by the patient. This is a necessary attribute of any method as the treatments frequently must be repeated.

As the passive introduction of lipiodol into the larynx is not dependent upon special instrumentation it is necessary to abolish to some extent the involuntary phase of swallowing. This phase consists of a relaxation of the normal tonicity of the esophageal orifice and an elevation of the larynx toward the base of the tongue together with a contraction of the pharyngeal muscles. This coördinated action is instituted by sensory stimuli applied to the mucous membrane of the pharynx, especially the anterior pillars. When this reflex arc is interrupted the larynx remains in its normal unprotected position and the esophageal orifice is closed. With this situation present, oil readily finds its way into the larynx.

I carry out the passive technic in the following manner: The patient is instructed to present himself with his mouth thoroughly cleaned with an antiseptic mouth wash. The anterior pillars, base of the tongue, and posterior pharyngeal wall are then painted with 10 per cent cocaine until the patient is conscious of a lump in his throat or finds that swallowing requires a conscious effort. Ten to 20 c.c. of lipiodol are then taken into the mouth and held there. The patient steps behind the fluoroscope. He is then asked to throw his head backward, lean to the side into which the lipiodol is desired to gravitate, and finally to grasp his tongue with a cloth held in the opposite hand, pull his tongue to the opposite side and inhale. Under fluoroscopic observation the oil can be seen to flow into the bronchial tree. The patient then expectorates any saliva in the mouth and carries out the same procedure in filling the other lung.

This brief description of the technic requires some amplification. It is important that the patient understand exactly what is expected of him. He is really the one who carries out the procedure and every step must be carried out in an orderly unhurried manner. If the patient does not know the sequence of steps he is very apt to do the wrong thing and produce a failure. For this reason I take great pains to instruct the patient and ask him to go through the procedure at home before coming for treatment. After the first treatment no instruction is needed.

The lipiodol flows more quickly into the lung when it is slightly warm. My custom is to have two beakers, each containing 10 c.c. of lipiodol, placed in a pan of warm water. These are prepared before the anesthesia and are ready for the patient when the anesthetizing is completed.

Fluoroscopic observation is necessary because the passive method is blind, and furthermore the mode of filling is often of diagnostic importance.

A roentgenogram of the chest should be made at the first instillation and it is necessary to have both lateral and anterior plates. There should be no delay taking these, as often only a few minutes is sufficient to render the plates worthless from a diagnostic viewpoint. Arrangements should be made to take the roentgenogram immediately.

Attention should be directed to the manner in which the patient throws the head back. The purpose of this position is to increase the difficulty of swallowing. Often the patient will bend the back instead of the neck. This produces no effect at all. It is better to personally adjust the head while the patient is behind the screen. In leaning to the side many patients simply bend the head. The body must be bent at the hips. The critical point has arrived when the patient pulls the tongue out. Here he often becomes excited and swallows. It is better to prevent this by the admonition, "Don't swallow, breathe in deeply."

CASE REPORT

Case 1.—Mrs. D. S., aged sixty, was referred to me for sinus investigation. She had had severe asthmatic attacks for the past twenty-five years and was greatly worried because the attacks had become more frequent. Various forms of treatment had been without avail. Examination of the sinuses revealed a chronic infection in both maxillary antra. It was decided to instill lipiodol into the bronchial tree before operating upon the antra. On June 12, 1931, lipiodol was instilled into both lungs. Within forty-eight hours there was a complete disappearance of the asthmatic symptoms. A few weeks later antromental openings were placed below the inferior turbinates. The day following the operation the patient had several mild asthmatic attacks which were easily controlled by ephedrine. The patient reported November 29th and that she had not been troubled with asthma since the day following the operation.

Case 2.—P. W., a male, aged thirty-two, reported May 23, 1931, complaining of nasal stuffiness, sneezing and watery discharge. These symptoms were associated with typical asthmatic attacks of frequent occurrence.

Various treatments to control the symptoms produced little relief. Skin tests were negative. Nasal examination revealed a marked deflection of the sputum. Nasal membranes were characteristic of the vasomotor type. Sinus investigation with lipiodol revealed a definitely thickened membrane of both antra. Local and general treatment gave little relief. Because he said his asthma caused him the most trouble, lipiodol instillation was advised. This was given June 22nd. June 25th he reported feeling much better. He had no chest symptoms following the instillation and on September 3, antromental openings were made. When he last reported on September 29, he had had only one slight asthmatic attack since the lipiodol was instilled. Vasomotor symptoms were negligible.

Case 3.—Mrs. D. J. was first seen November 13, 1929, complaining of asthma, dating back two and one-half years, and a bronchitis of six years' duration. The present attack has been severe for the past four months.

The symptoms consisted of extreme shortness of breath, chronic cough, wheezing and general weakness. General physical examination was negative except for the chest findings typical of chronic bronchitis. Special examination of the nasal sinuses disclosed a chronic purulent maxillary sinusitis. A bilateral intranasal antrum operation was performed November 19, 1929. The purulent discharge continued from the antra until November 30, 1929, when they became clear and remained so. During this time there was some improvement in her asthmatic symptoms in that the attacks were milder. Lipiodol was instilled into both lungs by the passive method December 10, 1929. On January 14, 1930, she reported that she had had no symptoms of bronchitis or asthma, except a slight infrequent cough. Physical examination of the chest was negative except for a few râles posteriorly. At this time the lungs were refilled with lipiodol. This patient died in March following a pelvic operation, but up to the time of her death had had no return of the asthmatic symptoms.

Case 4.—Mr. M. had had asthmatic attacks since October, 1927. With the exception of the lung findings typical of asthmatic bronchitis and the findings of a left purulent maxillary sinusitis, physical examination was essentially negative. The antrum infection cleared up after several lavages but no apparent relief was obtained from the asthma and his physician had to keep in constant touch with him due to the frequency and severity of the attacks. As the usual asthmatic treatment gave only temporary symptomatic relief it was finally decided to use lipiodol. This was instilled into both lungs January 13, 1930. Two days later the patient's extreme cough and extreme shortness of breath disappeared and since that time he has had no asthmatic attacks. His last report showed him to be entirely free from symptoms, and in addition he had gained considerable weight. This patient disappeared and no further reports were obtained.

Case 5.—A. K. had a history of asthma for years when first seen July 12, 1930. He said he was sensitive to many different things. Nasal examination was negative except for few small polyps in the region of the middle turbinates. Sinus X-rays were clear. Skin tests

showed plus 3 and plus 4 reactions to numerous antigens. Lipiodol was instilled August 28th. He says he was much improved until September 8 when he again reported that his symptoms had returned. He was placed upon a diet which eliminated the plus 3 and plus 4 food antigens and was asked to report later.

Case 6.—Mrs. C. came to the office July, 1931, complaining of a chronic cough of several years' duration and asthma for the past seven months. She had been under treatment for nasal trouble, and had been pronounced cured one month previously. Nasal examination disclosed marked polypoid changes in the membranes of both antra. A Caldwell-Luc operation was advised and lipiodol instilled in an effort to get her in better physical condition. Following the instillation she obtained considerable relief from the asthmatic symptoms but little change was noted in the cough. Caldwell-Luc operation performed. Both antra were found to be filled with polyps and greenish pus. Convalescence was rapid and the cough and asthmatic symptoms disappeared before she left the hospital. At the present time her only complaint is that she can not smell. The sense of smell had not been present for over two years. It returned suddenly while she was in the hospital but disappeared again as soon as she went home. It recurs from time to time but only for a few minutes.

Case 7.—Mrs. K., aged thirty-four, had had attacks of bronchitis since childhood. At times during childhood asthma was associated with the bronchitis. For the past six or seven years these attacks have been more severe and frequent and for the past nine months she has been extremely fatigued and unable to walk any distance without suffering extremely from shortness of breath. Asthma attacks had been so frequent her physician had had to keep in constant touch with her. Usual medical treatment had given little result. Lipiodol was instilled October 6, 1929. Filling was only partially successful due to spasmodic contraction of the bronchial musculature. Instillation, however, was repeated until we obtained what we considered sufficient lipiodol in both lungs. From the first instillation, however, the patient felt greatly relieved and now over one year has elapsed since the last one. She has been free from asthma and has gained greatly in weight.

Case 8.—H. C. Male. Aged fifty-five. Complaint: asthma. Physical examination negative except for usual chest findings of asthmatic bronchitis. Usual forms of treatment, including removal of localized chronic infections, afforded him little relief. Lipiodol was instilled in June, 1931. Marked relief was obtained for several weeks and the patient requested another instillation. This was done and the symptoms again disappeared. He has not reported for checking since the last instillation.

Case 9.—A. P., a female, aged forty-five, had suffered from severe asthmatic attacks for seven years. The usual methods of treatment, including removal of foci of infection, gave no relief. Lipiodol was instilled into the lungs December 10, 1929. From this time on, the patient had complete relief from asthmatic symptoms.

Case 10.—This patient, a female aged 40, had had

asthma for several years. Symptoms were present nearly all of the day so that she could not do any work about the home. Nasal examination revealed a marked bilateral purulent maxillary sinusitis. Lipiodol was advised as a first procedure with the understanding that an operative procedure on the sinus would follow later. The first instillation resulted in a reduction of the attacks to one a day which lasted about fifteen minutes. The patient felt much better and could walk and get about, something she was unable to do before. Drainage of the antra was then established by antromental openings. No further improvement was obtained although lipiodol was again instilled. The Caldwell-Luc operation was advised, but the patient refused further operative interference.

Case 11.—Mrs. E. K. was first seen August 4, 1931, with a history of asthmatic attacks for the past four years. She had tried many forms of treatment and undergone several operations, including the Caldwell-Luc and ethmoid exenteration, but no relief was obtained. Skin tests were negative. Nasal examination revealed a chronic catarrhal condition of the membranes but no evidence of abnormal discharge from any of the sinuses. In view of the fact that other treatment had failed it was suggested that lipiodol be instilled into the bronchial tree. This was done on September 3, 1931. The patient reported on September 3 that she had derived little benefit from the treatment. On November 29 she reported with much elation that her asthma was "cured." Following the previous visit her symptoms had gradually disappeared and for some weeks she had been symptomless. She ascribed all her relief to the lipiodol.

Case 12.—This patient, A. H., was treated by me at the Jackson Bronchoscopic Clinic in Philadelphia at the request of Dr. Harold F. Robertson. The patient gave a history of severe asthmatic attacks for the past five years. These attacks had gradually been increasing in severity. Four years ago he was treated in Temple

University Hospital with some relief. However, the symptoms gradually increased and the attacks became more frequent. Four weeks previous he had had severe attacks and was admitted to the hospital. Ethmoidectomy was performed at this time and great relief was obtained but he was still short of breath. He was discharged from the hospital on January 20, 1932. On January 28, the attacks returned with increased severity. Adrenalin gave relief for one hour. Severe attacks continued until February 2, 1932, when lipiodol was instilled into both lungs. The patient's symptoms disappeared the same day and up to ten days after the instillation he had been symptom-free.

Case 13.—A female, aged twenty-six, came to me November 27, 1931, giving a history of asthmatic attacks since she was a small child. She had had no attacks from 1918 to 1927. In the fall of 1927, symptoms returned but disappeared again during the winter. She had no trouble until early in 1930 when she began to wheeze and cough again. Symptoms were quite marked until March, 1931, when the symptoms abated greatly. Five weeks previous, the cough had returned, associated with shortness of breath and wheezing, slightest exertion bringing on an attack.

As she had recently been examined by her own physician no general examination was undertaken. Chest X-rays were negative. Nose and throat examination disclosed markedly thickened membranes in the maxillary sinuses. Tonsils had been removed one year previously, and both fossæ were clean. As the patient had been referred for lipiodol instillation only, this was the only procedure carried out. On December 8, 1931, 10 c.c. of lipiodol were placed into each lung. The patient reported again December 14, 1931, feeling fine. By May 5, 1932, she had had one slight attack which had lasted a few hours, and was brought on by drinking malt. The patient has a history of sensitivity to malt.

A FOLLOW-UP STUDY OF VARICOSE VEIN INJECTIONS*

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THIS follow-up study of the results of varicose vein injections was primarily induced by an unfortunate fatality which occurred as the result of vein injections in a man who had extensive varicose veins and a large varicose ulcer. Before and since this accident it had seemed to us that we were seeing an increasing number of varicose vein recurrences.

In reviewing the recent literature upon the re-

sults of varicose vein injections one finds considerable variance in the reported results. Kern,¹ in reporting 100 cases treated by solutions of dextrose and sodium chloride (the oldest case being followed for a period of eighteen months), reports recurrences in 10 per cent. De Takats² reports a 10 per cent recurrence within the first year. Howard, Jackson and Mahon,³ in reporting a series of sixty-six cases, where the sclerosing agent used was 20 per cent sodium chloride,

*From the Duluth Clinic.

and where these patients were followed for one year, report a recurrence in fifty-two cases. De Takats² emphasizes the importance of proper diagnosis and indications for treatment, as well as the type of treatment, the technic and the use of the proper sclerosing solution. McPheeters, Merkert and Lundblad,⁴ in discussing the causes of failure in the injection treatment of varicose veins, emphasize better technic and multiple injections. They state that recurrences are due to too great dilutions, failure to thrombose the great saphenous, and occurrence of normal recanalization. In order to prevent recurrences, they recommend injecting the great saphenous trunk, emptying the veins before injection, localizing the sclerosing solution, choosing the proper sclerosing agent, and keeping the patient under observation until all the varicose veins are sclerosed.

In January, 1930, we reported⁵ the use of sodium chloride in the treatment of varicose veins in eighty-one cases, and this present study covers the follow-up of these cases, together with others which have been under treatment since that time. The sclerosing agents used have been 20 per cent sodium chloride, 70 per cent glucose, or a combination of the two.

The data which will be submitted were accumulated as the result of a questionnaire sent out to some 300 individuals who had been under treatment and observation since 1928, when the treatment by varicose vein injections was begun in this clinic. To this questionnaire 155 answers were received, and the results of this questionnaire, together with the case report of the fatality, will constitute the body of this paper.

There are some who probably would question the accuracy of a questionnaire. It should be fairly satisfactory, however, because it gives the patient's point of view. The majority of this group of patients were under our close and repeated observation from 1928 on, and we personally feel that the results of this questionnaire are an accurate barometer of the results to be expected from varicose vein injections.

Five simple questions were asked, namely: (1) Do you still have trouble with your legs? (2) Are you now taking treatments for varicose veins? (3) Have you consulted other doctors to continue treatments? (4) Have you noticed that any of the varicose veins came back? (5) Have you been satisfied with the results of these treatments?

To this questionnaire, as stated before, we received 155 replies. In this group sixteen did not complete their treatments. It should be stated here that the treatments were not confined merely to vein injections, as thirty-eight cases were complicated by varicose ulcers. The various types of treatment included moist packs, adhesive strapping, compression bandages, Unna casts, and ligation of the saphenous trunk in five cases.

Seventy-two, or a little less than 50 per cent of the patients, reported that they still had trouble with their legs. Only approximately 10 per cent were still under treatment. Less than 10 per cent consulted other doctors to continue treatment. Sixty-one patients, or approximately 30 per cent, stated that they had noticed recurrences. Eighty per cent of the cases were satisfied with the results of treatment.

The following is the case report of the one fatality:

Mr. C. A. P., a male, aged forty, first came under our observation on August 2, 1928, and at that time he was complaining of varicose veins and a varicose ulcer.

Examination revealed extensive varicose veins of both lower extremities, with a large varicose ulcer on the right leg just above the ankle and on the inner side of the leg.

Vein injections were begun, and these were continued at intervals up until October 6, 1928, when it was reported the ulcer was healed and the veins were thrombosed.

This patient was not seen again until September, 1931, when he returned because of a recurrence of the veins and of the ulcer of the right leg. Again vein injections were started and continued at intervals until following an injection on October 17, 1931, he developed a severe phlebitis in the right leg, which extended up into the thigh and was accompanied by fever and chills. He was hospitalized on October 24, and at this time he was very evidently septic.

Death occurred on October 27 and autopsy revealed varices and ulceration of the skin of the right leg, edema of the leg, multiple abscesses of both kidneys, bilateral fibrinous pleurisy, beginning bronchopneumonia, acute congestion of the spleen and coronary sclerosis (Grade II). Smears from the right leg and from the abscesses of the kidneys revealed staphylococci.

SUMMARY

1. The results of a follow-up study upon 155 cases of varicose veins treated by vein injections are reported. Approximately 50 per cent of these cases still have complaints referable to their legs, 30 per cent report recurrences and 80 per cent have been satisfied with the results of treatment.

2. A case report of one fatality in the group is submitted.

CONCLUSIONS

Our experiences gained in the treatment of these 300 cases of varicose veins and varicose ulcers lead us to the following conclusions:

1. A careful appraisal and selection of the individual for varicose vein injections should be made.
2. A careful technic and selection of the proper sclerosing agent to suit the particular case must be instituted.
3. In suitable cases ligation of the great saphenous trunk, followed later by injections, will give more certain results.
4. Finally, a sane enthusiasm should be main-

tained toward the cure of varicose veins by injections.

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CARCINOMA OF THE FEMALE BREAST*

EARLY DIAGNOSIS AND OTHER FACTORS AFFECTING PROGNOSIS

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CANCER, one of the greatest scourges of our civilization, attacks both sexes, but with greater frequency in different organs. In the female, the most common site for cancer is in the uterus; next in frequency is the breast; these two sites accounting for 40 to 50 per cent of all primary cancers in women.¹

History.—Although cancer has affected the human race for centuries, it was not until after the introduction of anesthetics during the last century that surgeons began to operate more frequently and keep more detailed records. The pathology and dissemination of cancer were not understood and circumscribed operations were undertaken. Very few patients recovered. One famous surgeon of those days (Haynes Agnew) is quoted by Halstead,² as saying that he operated on the breast solely for the moral effect on the patients. It was commonly believed in the 1860's and 70's that operation hastened the end, and the general practitioner of those

days hesitated to refer these cases to the surgeon. Unfortunately we have these anachronisms with us today.

Billroth² improved the mortality rate by rapid and careful surgery and claimed a cure if the patient lived and showed no local recurrence in the scar in one year. Eighty-two per cent showed recurrences. Valkmann,² in 1875, stated that "one may feel sure of the result," if no local recurrences were found in three years. He removed the fascia from the pectoral muscles, and the fat and glands from the axilla. He reported 14 per cent of cures.

The credit for the radical operation for removal of the breast with the marked increase in permanent cures is usually ascribed to two American Surgeons of the early '90's, Willy Meyer of New York and William S. Halstead of Johns Hopkins, Baltimore, who independently described the radical removal of the breast for cancer. Halstead reported a series of fifty cases in 1894 and introduced the following radical changes in the operation.

1. Removal, always, of the pectoralis major

*Based on a study of sixty-six cases at the New Asbury Hospital, Minneapolis, by Dr. McKenzie, intern. Awarded second prize in the Annual Essay Competition of the Minneapolis Surgical Society, 1932.

muscle, leaving the clavicular portion intact, and the removal of half, sometimes all, of the pectoralis minor muscle.

2. Removal of all tissues intact.
3. Bloodless operation.²

The next important step in the cure of carcinoma of the breast was by W. Sampson Handley,³ who, in 1904, explained, in effect, the rationale of the radical operation and proposed a wide dissection of the deep fascia. By careful microscopic studies he found that cancer cells grow along the lymphatics found in the deep fascia of the breast and the underlying muscles. This method of spread he designated "lymphatic permeation" and found that it took place against the lymph stream equally as well as with it, thus explaining the radial spread of cancer. He also found that the cancer cells produced an inflammatory reaction about the lymphatics, tending to destroy these cells, which process he termed "perilymphatic fibrosis." Cancer thus spreads in the parietal tissues by permeating the lymphatic system "like an invisible annular ringworm. The growing edge extends like a ripple in a wider and wider circle, within whose circumference healing processes take place so that the area of permeation at any one time is not a disc, but a ring."³ "We cannot predict which one or more of the lymphatic routes to skin and fat, to bones, or to thoracic and abdominal viscera, permeation will elect to follow in any given breast case, but once we obtain evidence of permeation having started on one or more routes, we can make a reasonably accurate prediction of the metastatic deposits that will follow."⁴ The recognition that cancer, if disturbed, may grow more rapidly, made some method of immediate diagnosis at biopsy necessary. This has been provided by staining of frozen sections, immediate diagnosis, and continuation of the operation without lapse of time.

The discovery of roentgen rays and radium led eventually to another important advance in the treatment of cancer of the breast. It was found that these rays killed immature cells of the tumor more easily and more quickly than mature cells of the tissues. This fact has led to the use of X-ray and radium in the preoperative and post-operative therapy of breast cancer.

During the past twenty to twenty-five years there have been no startling advances in the cure of cancer, but technic has been improved and a mass of valuable data assembled.

Basis of Study.—This study of carcinoma of the breast is based on a series of sixty-six cases of women with this disease, admitted to New Asbury Hospital, Minneapolis, during the years 1924-1931, inclusive. Of these cases, forty-nine were admitted previous to March 15, 1929.

The study is based on the intern's histories, the surgeon's dictated operative report, the pathologist's report, and a follow-up of the patients by personal interviews with the surgeons. Most of the patients have returned twice a year to their respective surgeons for a periodic check-up.

Age.—Cancer of the breast is essentially a disease of middle life. No case occurred in this series before the age of twenty-five. The age limits were 28 to 91 years. The average age was 53.3 years.

TABLE I
Age Series

Age	No. of Cases
25-34	3
35-44	7
45-54	19
55-64	15
65-74	11
Over 75	7
Age not given.....	4
Total	66

Thus, over 50 per cent of cases occurred between the ages of 45 and 65 and nearly 30 per cent in the decade after 45 years. The relative frequency is greater in these decades. The accompanying graph shows the female population in Minnesota according to the U. S. census⁵ in the above age periods, with a graph of the above incidence of cancer superimposed upon it.

This graph shows that cancer increases relatively very sharply in the fourth and fifth decades, but declines correspondingly with the total female population in the later decades. Carcinoma is then selective for the age group 45 to 54.

Married and Single.—For many years cancer of the breast was thought to be a disease of married multiparæ but more recent figures show that this is not so evident as was formerly supposed. Dean Lewis⁷ states, in reporting 950 cases at the Johns Hopkins Hospital, that "marital status played no part in the occurrence of cancer of the breast in this (Johns Hopkins Hospital) series of patients."

In our series of 66 cases there were fifty-seven married and nine single women. Of the fifty-seven married women the pregnancy record of forty-two only is noted. Of these there were

nine nulliparae, so that only 33 had borne children. But the proportion of single to married in Minnesota over 25 years of age is 1 to 3.⁵ A corrected comparative figure then would be 27 single, 9 married nulliparae and 33 multiparae. The marital status probably plays little part in the production of cancer in America.

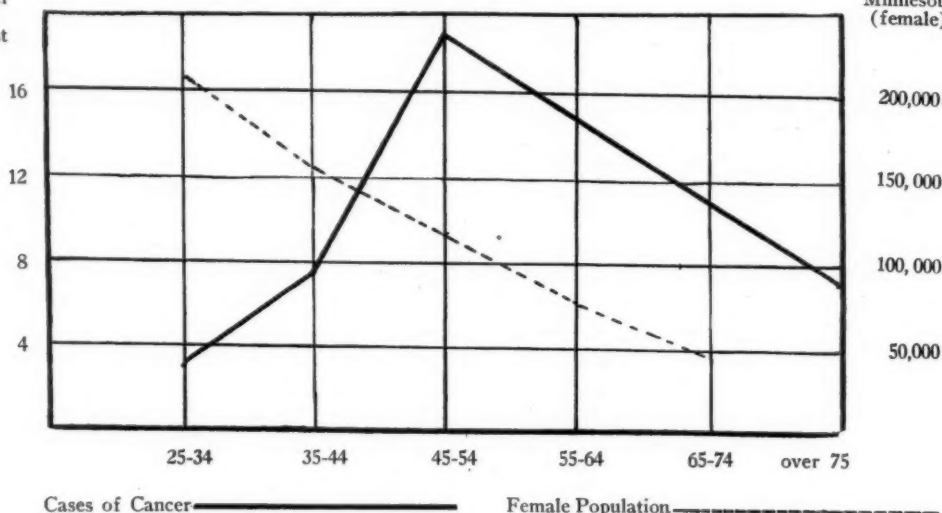
The cancers were assigned to three classes. For various reasons no examination was made or no record given in eight cases.

Types of Operation.—All the primary operations except three were of the Halstead, Jackson, Rodman types or some modification. In one case the fascia only was removed, leaving the pectoral

Cases of
Cancer
of
Breast

GRAPH I

Population
of
Minnesota
(female)



Right or Left Breast.—In this series of sixty-six cases, the primary tumor appeared thirty-five times in the right breast and thirty-one times in the left breast. No record is given as to the dextrality or sinistrality in these cases and therefore no conclusions can be drawn.

The affected quadrant of the breast was stated in very few cases.

Types of Carcinoma.—The cancer tissue removed at operation was examined microscopically by the staff pathologist. In doubtful cases he submitted sections to pathologists at the University of Minnesota or the Mayo Clinic at Rochester for consultation. All suspicious axillary glands were examined.

TABLE II
Types of Cancer of Breast

	No.	Per cent
Scirrhus	49	74.3
Medullary	5	7.6
Adenocarcinoma	4	6
Not given	8	12
Total	66	

muscles in place. In two cases the tumor only was removed. Unfortunately there is no follow-up of these two cases.

It is very difficult to evaluate the type of operation in this small series. Dean Lewis⁷ makes considerable mention, however, of types of operation in the Johns Hopkins Hospital series of 950 cases. He concludes that: (1) meticulous care in dissection and wide incision are important; (2) "for patients . . . in whom there were regional metastases the percentage of deaths is lower for the Halstead Thiersch graft than the closed plastic group and the same may be said for the series without metastases except for the 5 to 9 year period.

Operative Mortality.—One patient in the series died eleven days post-operative, of bronchopneumonia, an immediate post-operative mortality of 1.5 per cent.

Study of Forty Cases.—Some of these sixty-six patients had been operated upon too recently for conclusions to be drawn regarding the results of operation. Seventeen patients had been ad-

mitted since March 15, 1929, leaving a total of forty-nine admitted from 1924 to March 15, 1929. Of the forty-nine, no follow-up could be obtained in nine cases, leaving forty patients on whom sufficient data were available to attempt drawing conclusions.

The following table shows how these are grouped.

TABLE III

	No.	Per cent
Alive and well after 5 years.....	6	15
Alive and well after 3 years.....	15	37.5
Alive but with recurrences regional or local after 3 years.....	5	12.5
Dead within three years from recurrence	8	20
Inoperable cases	3	7.5
Dead within 3 years from other causes; no recurrences noted.....	3	7.5
	<hr/> 40	

There were then 65 per cent alive at the end of three years; 52.5 per cent without recurrences, and 12.5 per cent with recurrences.

Early Diagnosis.—The classical diagnosis of cancer of the breast has been fixation of tumor, retraction of nipple, ulceration, bleeding from the nipple, axillary involvements, and cachexia. This is comparable to the classical signs of intestinal obstruction—fecal vomiting, constipation, distended abdomen and Hippocratic facies—and the diagnosis made on these signs results in about the same chances for recovery.

There are various reasons why women with lumps in the breasts neglect to seek diagnosis early. Cancer of the internal organs may attain a large size before it is recognized. With the breasts not inaccessible it is strange that changes in their contour and consistency are not sooner noticed. However, patients more commonly seek medical service on account of pain, and pain is absent in most cases of breast cancer. It was a primary symptom in only 11 per cent of this series.

Some women, even after discovering a lump, are "afraid it is a cancer" and do not seek diagnosis. In some cases the lump is attributed to injury (10 per cent in this series), but it is doubtful if trauma plays any part in the production of the disease. Every woman can recall some blow or injury to the breast, but very few develop carcinoma. The rise of so many non-surgical culs undoubtedly has its effect, two in this series having sought non-surgical relief.

The remissness in diagnosis is not entirely due to laxity on the part of the patient. Although somewhat incredible, five women in this series (7.5 per cent) had seen their doctor and apparently had been advised that the lump was not a cancer or had been advised against operation.

In most cases, a lump is the earliest sign. In this series it was noted as a first symptom in 80 per cent, and was present, of course, in 100 per cent. Pain was a first symptom in 11 per cent, discharge in 3 per cent, tenderness in 1.5 per cent (one case). Drs. Pfahler and Widman of Philadelphia⁸ in a series of 801 cases, however, give lump as the first symptom in 53 per cent and pain in 21 per cent.

Sir George Lenthal Cheatle⁹ gives the following points in early diagnosis. He considers any woman in the cancerous age as susceptible (and the cancerous age as shown by other statistics is any age over seventeen years).

1. If the breast contains a painless lump, completely round, small and not adherent, it in all probability is a carcinoma.
2. If the painless lump is lobulated, lightly attached to the skin, but elastic and fluctuating, it may be a fibro-adenoma, but, in any case, a biopsy should be performed with a generous removal of the surrounding area, and its nature determined macroscopically and microscopically.
3. If there is a spontaneous discharge of blood from the nipple, increased by pressure, in a breast containing any sized tumor and no very recent history of trauma, the breast is considered cancerous.
4. If there is a persistent spontaneous discharge of serum from the nipple in a breast containing a lump, the breast is considered cancerous.
5. If there is a localized "lumpiness" in any segment, a biopsy should be done, but if there is any suspicion of puckering or increase in size, the breast is considered cancerous even before biopsy.
6. If there are generalized fluctuating lumps he considers the breast cancerous, but admits that there is room for argument in these cases.

He advises immediate radical removal of all cancerous breasts. With regard to the last diagnostic point Dr. Bloodgood¹⁰ states, however, that "border line breast tumors in the clinical group

are those in which, no matter what the signs and symptoms may be, one is still uncertain as to definite malignancy. In this group exploration should be done."

There are a few elementary points in the clinical examination that will always bear repetition as they assist in early diagnosis. Sir G. Lenthal Cheatele prefers the patient on the back with a pillow properly placed under the shoulder blades in order to make the breasts more prominent and the axilla more easily palpated. Others prefer to have the patient sitting up squarely in bed or on a chair.

On inspection one looks for a lump, puckering of skin, retraction of nipple, elevation of breast, changes in the texture of the skin, and supraclavicular fullness. On palpation, one uses the flat of the hand to discover the position and consistency of any lump, the thumb and forefinger to test for adherence to skin or underlying fascia and the tips of the fingers to palpate nodes in the breast and axilla.¹¹

Recently two other methods of early diagnosis have been described. Dr. Max Cutler reports favorably on transillumination of the breast as a means of early diagnosis.¹² Drs. Fray and Warren have very recently described a method of diagnosis by means of stereoscopic roentgenography of the breasts and offer the method as a valuable supplement to clinical examination in establishing diagnosis and assisting in prognosis. They conclude that most of the gross pathological changes in the breast are as readily identified in stereoscopic roentgenograms as they are in gross specimens at biopsy or autopsy.¹³

Undoubtedly the responsibility of early diagnosis primarily rests upon the women who may have tumors in the breasts. In many cases those tumors grow slowly and are not observed. Many things, although quite noticeable, escape observation, until one's attention is drawn to them and this commonplace may explain why so many women do not notice a tumor in its operable stages.

Consequently there is a certain responsibility devolving on the medical profession of drawing the attention of women everywhere to the occurrence of tumors in the breast. Probably this may best be done by talks over the radio and by articles in the newspapers and in popular health magazines. Nor should we cease to advocate periodic health examinations.

OTHER FACTORS AFFECTING PROGNOSIS

1. *Age of Patient.*—In this series of forty cases, the following table gives the ages according to groups.

TABLE IV

	Age limits	Av. age
Alive and well after 5 years.....	28-62	50
Alive and well after 3 years.....	34-72	58
Alive after 3 years with recurrences....	43-75	61
Dead before 3 years.....	46-82	63

This would seem to indicate that the younger the patient the better chance for operation recovery and longer life. However this series is too small, and the expectancy of life at given ages has not been calculated, so that no conclusions can be drawn. It is noteworthy though that the two youngest patients in the series, twenty-eight to thirty-four years, are still alive and well three and five years respectively after operation.

Drs. Burton J. Lee and N. W. Cornell in a series of eighty-seven cases conclude, on the other hand, that cases occurring under forty years of age have a more unfavorable prognosis than those occurring in patients over sixty years.¹⁴

Dean Lewis also notes, in 116 cases, that on the whole the younger the patient, the more susceptible to local recurrence.⁷

2. *Duration of Lumps.*—The preoperative duration of symptoms was noted with reasonable certainty, in only twenty-four cases.

Of twenty-one patients still alive three and five years after operation, the duration of symptoms ranged from one week to ten years, with an average of twenty months. Only one patient had symptoms for more than four years and it is noteworthy that although she had had a tumor for ten years, she had taken X-ray treatments three years previous to operation.

Of those dead of recurrences within three years the average preoperative duration of symptoms was four and a half years.

In Dr. Halstead's original series reported in 1894 the preoperative duration of symptoms of those alive after three years was only five months.²

Quoting Dean Lewis' report of 950 cases: (a) "There is a marked difference in those coming early to operation, within three months, and those not coming for 12 to 24 months. Of the former group there was a great mortality for three years but those alive then survived many years. This is due to the type of tumor and rapidity of growth caus-

ing widespread early metastases. Of the latter group, more died after three years, pointing to a relatively slow growth of tumor."

- (b) "Over one-half of those still living were operated upon within six months of onset."

It may be safely concluded then that early diagnosis and operation, within a few weeks of onset, give the greatest chances for permanent recovery.

3. *Type of Tumor*.—Previous to operation the type of tumor is not usually known, although it may be presumed. For purposes of prognosis after operation, however, the type of tumor may be taken into account.

In this series 74 per cent were scirrhus carcinomas. In the patients surviving more than three years there were twenty cases or 95 per cent of the scirrhus type and only one of the medullary type.

4. *Metastases of Axilla*.—In attempting to establish a relationship between axillary involvement and prognosis, the reports of the surgeon and pathologist only were taken, as they had access to the area involved. The series taken consists of those alive at the end of three years with or without metastases and those dead before three years of recurrences. There were thirty-four cases. In four cases it was not definitely stated that the axillary nodes were not involved. In the remaining thirty cases the axillary nodes were involved in twenty. Of these twenty patients, ten had metastases or were dead of metastases within three years. Of twenty-one patients alive and well after three years, ten had involvement at operation, ten were free and one was not noted.

TABLE V
Axillary Metastases

	Alive and well	Dead or with met.
Nodes involved in axilla.....	10	10
Nodes not involved.....	10	—
Not given	1	3

An attempt was also made to correlate adherence to skin and fascia or both but data were insufficient. The following, however, is noted concerning the axillary involvement combined with adherence to skin and fascia.

From this series then one might conclude that even with axillary metastases 50 per cent of patients are alive and free from recurrence in three years but that with axillary involvement com-

bined with adherence of the tumor to skin or fascia, the chances of living three years are decreased at least one-half.

Dr. Burton J. Lee¹⁴ found, however, that only one patient of seventy-five with axillary nodes involved lived five years.

TABLE VI
Adherence and Metastases

	No. of cases	Adherent, axilla involved	Per cent
Alive and well after 5 years.....	6	0	0
Alive and well after 3 years.....	15	6	40
Dead with metastases in 3 years.....	8	6	75

5. *Deep X-ray Therapy or Radium Postoperatively*.—The data concerning deep X-ray therapy and radium used postoperatively was inconclusive as the treatments given in all cases could not be ascertained. However, forty (52.5 per cent) of the series received some form of postoperative radiation. Of those surviving five years, 83 per cent received some form of postoperative radiation, whereas of those dying within three years only 50 per cent received any form of postoperative radiation. This seems to point to some value in postoperative radiation therapy.

6. *Pregnancy and Lactation*.—There were no pregnant women nor any with lactating breasts in this series. It is quite generally noted that prognosis is extremely unfavorable in these cases.

SUMMARY

A study of 66 cases of carcinoma of the breast in women, admitted to New Asbury Hospital, Minneapolis, from 1924 to 1931 inclusive, is presented. More detailed study is given of forty-nine cases admitted prior to March 15, 1929, on 40 of which a follow-up was obtained. Quotations and adaptations from recent literature on the subject of breast cancer are also given. Some diagnostic points in early carcinoma are noted. The responsibility for early diagnosis is placed chiefly on the patient but also to some extent on the medical profession. Other factors, affecting prognosis, such as age, duration of symptoms, axillary involvement, and postoperative radiation, etc., are reviewed.

CONCLUSIONS

1. The chances of patients for permanent cure today are greatly increased over those of the last century.
2. Carcinoma of the breast is selective for

the age group of forty-five to fifty-four years.

3. Over 50 per cent of patients in this series of forty cases were alive and without recurrence three years after operation.

4. Axillary metastases combined with adherence of the tumor to skin and fascia markedly diminish the chances of cure.

5. Post-operative deep X-ray therapy and rences.

6. Early diagnosis and early operation still radium may be of value in preventing recurrence the greatest hope of permanent cure.

Note: The writer wishes to thank the Superintendent and the Surgical Staff of New Asbury Hospital, for making records available, and for their kind cooperation in the follow-up of patients.

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THE CONTINUOUS SIPHONAGE TREATMENT BY NASAL CATHETER FOR POSTOPERATIVE VOMITING, PAIN AND DEHYDRATION*

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BASSLER,¹ in 1919, published an article on siphon drainage by means of the duodenal tube, and reported a case of postoperative ileus successfully treated. He also reported a case of acute dilatation of the stomach so treated and adopted a method for continuous drainage of the stomach by passing the tube through the nostril into the stomach.

A. L. Levin² devised a new tube with a small catheter tip which could be easily passed through the nose. This he found was better tolerated in continuous siphonage of the stomach and duodenum.

Human beings have inherited from their prehistoric ancestors the dread of pain. It has always been interpreted as a sign of danger to

the individual. If it were not for the knowledge that pain and other unpleasant sensations such as vomiting, thirst, ileus, obstruction, or peritonitis occasionally follow operations, patients would more readily consent to necessary surgical procedures. The profession has constantly tried to mitigate the suffering following abdominal operations, and has made some progress as shown by the relief afforded today compared with that of earlier years. The prospective surgical patient today is thoroughly examined and the vital organs are put in the best possible condition before operation. An anesthetic that is most suitable is selected. Postoperative pain, vomiting, thirst, and toxemia are combated by more effectual means.

Acute dilatation of the stomach and gas in the intestines are accompanied by pain and general

*Read before the Minnesota Academy of Medicine, February 10, 1932.

discomfort, but when these conditions are absent the comfort and convalescence of the patient is more satisfactory.

Frequent gastric lavage following laparotomies has aided materially in effecting a smoother postoperative course. The surgeon who habitually employs this means of decompressing the abdomen is doing much to aid in the recovery of his patient and in lessening the mortality rate. Although frequent gastric lavages are beneficial, the patient often suffers again shortly following the washing. Consequently, some have used the continuous suction apparatus to prevent recurrence of these symptoms as, by this method, the gas and deleterious substances can be continuously removed from the stomach.

The benefits to be obtained by such a procedure are not generally known. It is my purpose in this paper to draw the profession's attention to this humane procedure, and to urge its more general adoption.

The Levin tube is passed through the nose into the stomach and the catheter attached to a tube connected with a bottle as shown in the illustration (Fig. 1). Gases and toxic substances are at once extracted from the stomach and the patient soon begins to show the effects of the treatment.

This method of avoiding gas accumulation and vomiting I first attempted in 1924, in a patient with a perforated duodenal ulcer that could not be securely closed at the time of the operation. The catheter introduced through the nose into the stomach prevented "a blow-out" and relieved the gas pressure. It was a simple method of siphonage whereby the gases and liquids could escape. There was no attempt, however, to measure the amount of gas removed or fluids assimilated.

Burt³ published an article in 1931 in which he described the use of the Levin tube passed through the nose into the stomach. He withdrew the gas and fluid contents from the stomach with a syringe. He allowed the patient to drink fluids or injected them into the stomach through the tube with a syringe. He did not, however, calculate the amount of gas removed.

The method described by Wangenstein⁴ before the last Western Surgical Association in December, 1931, provides a more perfect means of measuring the amount of gas extracted, the fluid intake, and the amount assimilated. I have

employed with marked success a similar method of late in my severe postoperative cases.

Some of the advantages of the continuous siphonage in postoperative or obstructive cases

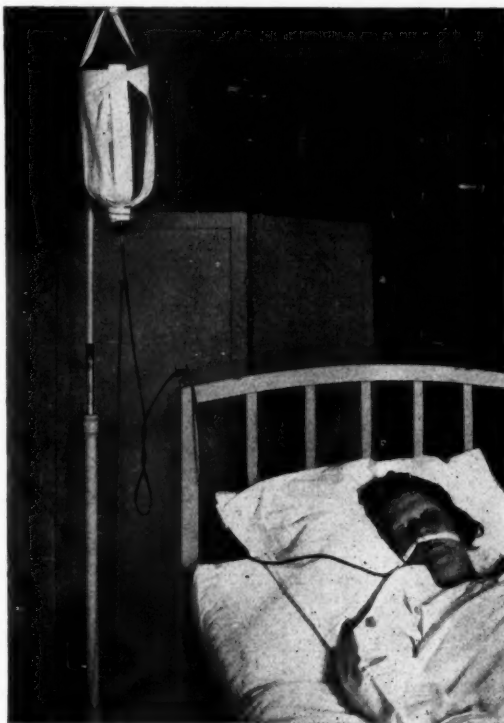


Fig. 1.

by means of the nasal catheter are hereinafter discussed. A non-inflammatory surgical patient does not have much pain following an operation unless the operation is connected with some part of the body that cannot be immobilized or in which pressure cannot be prevented either from gas or contiguous moving organs. An operation performed upon any of the abdominal organs is usually followed by irritation and pressure within the intestines from the accumulation of gas and intestinal contents. If gaseous distention of the stomach and the intestines can be relieved, there will be less pain and less need for narcotics. Any means of eliminating the use of narcotics is of great value. Continuous suction meets this indication.

One of the most distressing sequelæ following operation is nausea and vomiting. The patient can take no food, suffers pain while vomiting and

is fearful of breaking open of the wound. The continuous catheter suction does prevent vomiting as it empties the stomach and permits the patient to drink freely of water and other liquids.



Fig. 2.

It is very important following an operation to supply fluids to the tissues and this is accomplished by proctoclysis and hypodermoclysis. These, however, can be discontinued in a short time after the installation of the suction apparatus because the patient can then begin to drink water and other fluids with less distress, pain, or vomiting, unless there is complete obstruction of the gastro-intestinal tract. The suction apparatus can be shut off at intervals so that gradually more and more of the fluids are allowed to pass into the lower intestinal tract and be absorbed.

The retention catheter allows the taking of large amounts of cold water, which is gratifying to the patient, cools the tissues and reduces the local as well as the general temperature of the body.

Marked reduction in the pulse rate is noticed when the gas pressure is removed, and fewer or no stimulants are required.

The early restoration of the activities of the

liver, gallbladder, stomach, and bowels seems to be brought about. The gas and deleterious regurgitated substances are extracted from the stomach at once. The sight, taste, ingestion, and actual presence of food in the stomach stimulates the glandular activity, and the alimentary canal is then prepared to receive the food. Digestion and assimilation begin and the presence of the normal constituents in the bowel produces peristaltic activity with elimination of waste products.

Toxicity in obstructive cases or diffuse peritonitis is a serious complication following laparotomies. The installation of continuous suction lessens the intra-abdominal tension, removes the gas and regurgitated toxic material, favors the return of normal peristalsis and minimizes the possibility of postoperative adhesions. The heart is less embarrassed and the strength of the patient improves.

Restlessness and loss of sleep interferes with convalescence and is as necessary to combat as real pain. If we can overcome fear, strengthen the morale, and restore confidence by promoting comfort, rest, and sleep, convalescence is smoother and recovery is hastened. Satisfying thirst and hunger with water and liquid food without disturbing the tranquility of the stomach, as is possible with the suction method, has a favorable psychological effect on the patient.

When the continuous suction is started early after operation before the stomach becomes distended with gas, and in advance of any severe embarrassment of the heart from pressure, suffering is minimized, convalescence shortened and the mortality rate reduced.

The introduction of the catheter is simple. A small amount of cocaine is sprayed into the nostril. A good rubber catheter, well lubricated, is passed into the nares and the patient is instructed to swallow. The physician then gently but rapidly feeds the catheter until it enters the esophagus and then the stomach. The patient may further assist by drinking water at the same time.

The catheter can usually be kept in the same nostril continuously without discomfort if the mucous membrane is sprayed daily with ephedrine and a mild saline antiseptic, and a liquid non-irritating lubricant is occasionally introduced into the nose.

After the introduction of the tube the patient

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may then begin to drink water freely and later orange and grape juice, ginger ale, broth, beef tea, etc. All liquid food, however, must be strained through gauze to remove any particles

I have found that 4,000 c.c. graduated bottles are very suitable and placing 3,000 c.c. of water in the inverted, suspended bottle and 300 c.c. in the floor bottle makes it much easier for the

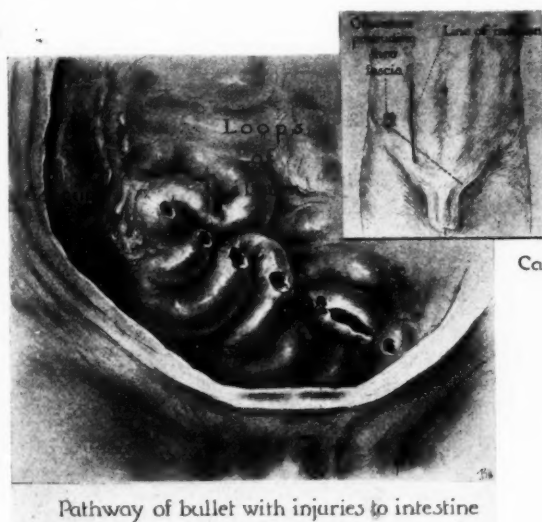
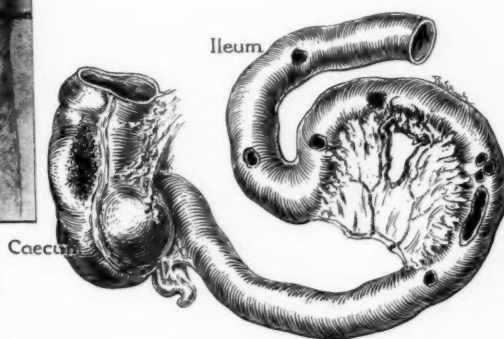


Fig. 3.



Relative location of intestinal injuries

Fig. 4.

that might block the catheter and prevent proper suction.

It is important that a well trained nurse be in charge. She must understand the modus operandi of the apparatus, its object, and how to overcome any blocking of the tube and how to detect leaks. The success of the procedure depends upon her watchful care.

In order to measure the amount of gas siphoned and the fluids assimilated, one must have a known amount of air and water in the suspended bottle and the tube in the floor bottle submerged beneath a known amount of water. The known loss of fluid in the suspended bottle subtracted from the amount siphoned into the bottle on the floor will give the amount extracted from the stomach. This subtracted from the amount of fluid taken by mouth determines the amount retained. These figures added for twenty-four hours will give the daily amount of fluid absorbed. The amount of gas removed is determined by measuring the amount of gas in the suspended bottle, subtracting therefrom the known air in the top of the suspended bottle at each filling of the bottle with water and adding these figures for the daily output.

nurses to make twenty-four hour calculations of gas, amount of fluids taken, amount siphoned from the stomach, and the amount assimilated.

It is essential that the apparatus be carefully watched to determine whether there is perfect suction or not, and to see that no particles of food remnants or mucus clog the small openings and lumen of the tube. If the tube does clog it may be clamped above the glass connection which unites the catheter that is in the stomach with the longer tube which extends through the cork of the elevated, inverted bottle. This tube should extend above the level of the fluid in the suspended bottle. The catheter can then be cleaned out by injecting water through it into the stomach and withdrawing it again.

The following cases will illustrate the use and advantages of the method.

Case 1.—At 8 a. m., on November 15, 1931, a young man, twenty-two years of age, while hunting, carelessly put his No. 22 (long) revolver, cocked, back into his holster on his right side. The revolver went off and the bullet entered diagonally the lower right quadrant of his abdomen. He was rushed to the hospital eighteen miles distant.

X-rays showed evidence of fluid in the abdomen. Evidence of the presence of a metallic foreign body

was not definite because of movement and the slow exposure of the portable machine (Fig. 2).

The patient was in fair condition, pulse 80, temperature 97.4. Although there was a rigid abdomen, especially on the lower right, he complained of little pain or discomfort. There was dullness in the lower abdo-

men. The urine contained no blood. He was not in distinct shock and therefore an operation was performed three hours after the accident.

Under local, gas and ether anesthesia a right rectus incision was made just inside and above the anterior superior spine. The omentum was protruding through the bullet wound. The abdomen contained a large quantity of free blood, clots, and bowel content. Saline solution with suction was used to wash out the abdominal cavity. The ileum was injured and punctured in nine places by the bullet on its diagonal downward course (Fig. 3). The punctures and rents occurred in various places for about three feet along the ileum. One area consisted of an injury to the mesentery for about two inches causing considerable hemorrhage into the abdomen. At this point the bowel was not punctured. At a second area the bowel wall was ripped open opposite the mesentery two inches in extent and near the end of this area three small punctures existed near each other, about the size of a slate pencil. Similar sized punctures existed in other areas (Fig. 4). The cecum was injured but the wall was not punctured. The rest of the intestine was examined, but no injury was found. The iliac vessels were intact. The bullet was not discovered.

All the raw and lacerated areas were carefully stitched. The circulation was somewhat impaired in one area where the bowel had been greatly lacerated. All the areas involved were brought within a small space just below the incision, the omentum used to cover these areas, and four small Penrose drains in-

serted into the pelvis below the injured coils (Fig. 5). The patient stood the operation very well. There seemed to be little shock.

His temperature rose on the third day to 103 but gradually declined to normal on the fourteenth day. The average pulse rate up to the fifth day was 100

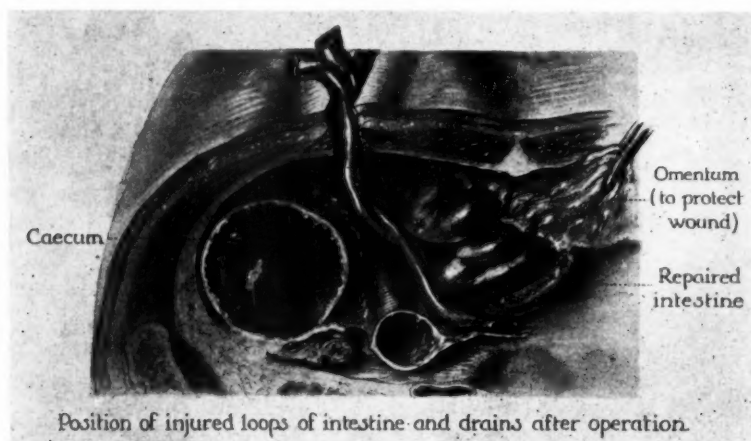


Fig. 5.

but gradually declined to 80 on the twelfth day. His respirations were normal.

His leukocyte count was 28,000, 10,000, 22,000 and 10,000 on the first, third, eleventh and nineteenth days respectively.

Pain was experienced in the abdomen, back and legs more or less for the first ten days. When the stomach would become distended with gas the pain in the back was more marked as well as restlessness. He had to have from three to five hypodermics for the first four or five days.

Nasal suction was instituted on the third day with marked decrease in the amount of gas and distention, 900 to 600 c.c. of gas being removed daily from the fourth to the ninth day.

No vomiting occurred after the tube was inserted.

The kidney function was good, the output varying from 775 c.c. on the first day to 1,125 c.c. on the fifth day.

The bowels were quiescent the first three days, but from then on the action became normal with one or two stools a day and considerable flatus being expelled for about eight days.

There was marked thirst for the first three days, but after the insertion of the tube this was negligible.

Hypodermoclysis of normal saline in amounts ranging from 1,500 to 2,000 c.c. was given on the first, second, third and fourth days. For the next four days he was given about 750 c.c. by proctoclysis daily besides taking from 3,000 to 4,000 c.c. of fluids in the form of water, tea, orange juice and bouillon by mouth. The

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average absorption of these fluids from the third to the ninth day was about 800 c.c. After the ninth day the amount of fluids taken by mouth was increased to include beef tea, ginger ale, soups, and egg-nogs varying from 4,000 to 6,500 c.c. per day. On the fourteenth day the suction tube was closed two hours and opened two hours alternately and from then on gradually closed at longer intervals until it was removed on the eighteenth day. Thereafter toast, custards, poached eggs and ice cream were gradually added to the diet.

An X-ray taken on the eighteenth day after the accident showed considerable distention of the bowel throughout, but no evidence of the foreign body (Fig. 6).

The wound was in good condition with the exception of a small amount of discharge. The drains were removed gradually, and the wound was healed on about the twentieth day.

The patient left the hospital on the twenty-ninth day and has been well since.

Case 2.—A widow, aged 48, had had an essentially negative personal and family history. She had had no operations or injuries. Her menses had been normal up to a year ago. She had had three children, all normal deliveries.

About a year ago her menstrual periods became irregular, with some menorrhagia or metrorrhagia. There was little or no dysmenorrhea. On January 30, 1932, she was suddenly taken ill with severe sharp pain throughout the lower pelvis, especially on the right side, with some nausea and vomiting. She had considerable uterine bleeding, produced by the slightest straining.

She was moved to the hospital where a flat X-ray (Fig. 7) was taken with the following report: "The findings in the abdomen are those of some fluid together with some medial displacement of the cecum which may be due to fluid or a mass in the lower right quadrant. There is also thickening of the bowel wall."

She had pain upon palpation and percussion over the abdomen with rebound tenderness especially in the lower right quadrant. The abdomen was greatly distended with gas. The cervix was ulcerated and apparently cancerous. The uterus was fixed to a mass in the right side. Diagnosis of possible cancer of the cervix with lymphatic involvement, salpingitis, and acute appendicitis was made.

Her temperature was 99.8, pulse 88, and respirations 20. There was a faint trace of albumin in the urine as well as a rare granular cast, a few pus and blood cells. Her red blood count was 4,070,000; leukocyte count 7,150; P. M. N., 86; small lymphocytes 12, large lymphocytes 2.

An operation was decided upon because of the acute symptoms present and the possibility of appendicitis.

An outer rectus incision was made. Exploration revealed an enlarged uterus fixed on the right side with an infected mass involving the right ovary and tube. The peritoneum was red and inflamed, and the abdomen contained 50 c.c. of sero-purulent fluid. The appendix was congested and inflamed but not ruptured. The infectious material was sucked out, the appendix re-

moved, and two Penrose drains inserted. The abdomen was closed in the usual manner.

Two days after the operation another X-ray was taken which showed a moderate distention of the colon and numerous loops of small bowel. A tube had been passed through the esophagus and the tip of the tube

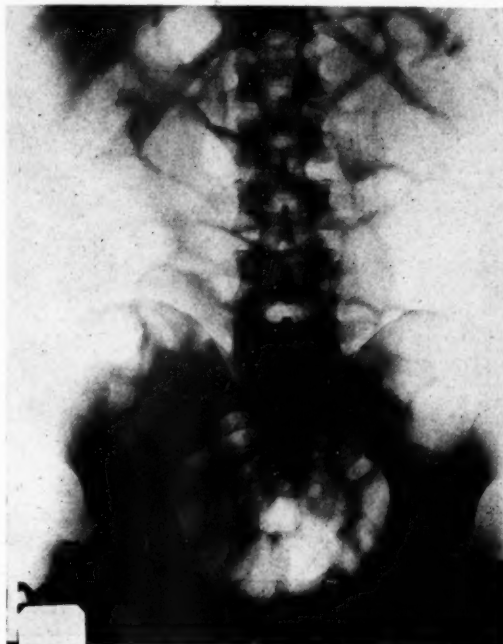


Fig. 6.

lay in the cardia. There was still some evidence of thickening of the walls of the bowels (Fig. 8).

On the fifth day after the operation her leukocyte count was 12,750, small and large lymphocytes 13 per cent; P. M. N. 67—somewhat toxic.

She had more or less pain and restlessness when the nasal tube was inserted the second day after the operation, became clogged or worked imperfectly, but after the third day the distention and pain became less so that hypodermics were required only for sleep.

She had a hypodermoclysis of 1,000 c.c. daily for the first three days and averaged about 3,100 c.c. of fluids by mouth up to the seventh day. The absorption was from 100 c.c. the second day to 1,100 c.c. on the seventh day besides what was given by hypodermoclysis and proctoclysis.

The gas removed varied from 300 to 600 c.c. on the third day and gradually declined to 300 c.c. on the eighth day.

The kidney function was practically normal all the time.

The bowel action after the third day was good except on the sixth day there was a tendency for diarrhea.

The nasal suction tube was removed on the eighth day.

Her convalescence was satisfactory from the eighth to the seventeenth day postoperative. The abdominal wound was practically healed except for a slight discharge. Epithelization was nearly complete on leaving the hospital on the twenty-second day.

in the physiological action of the digestive glands, and in the peristaltic activity of the intestines and early evacuation of the bowels.

6. Removes the regurgitated and toxic fluids



Fig. 7.



Fig. 8.

Biopsy of the cervical tissue showed a carcinomatous growth which was operated upon with diathermy cautery, and fifty mgms. of radium inserted in the cervical canal for twenty-four hours. Convalescence was satisfactory.

CONCLUSIONS

Continuous nasal catheter suction treatment in postoperative cases:

1. Lessens pain and decreases need of narcotics.
2. Overcomes vomiting, permits early administration of water and other liquids, lessens thirst, and satisfies hunger.
3. Prevents dehydration so that proctoclysis and hypodermoclysis can be discontinued early.
4. Reduces the temperature and pulse.
5. Stimulates the liver and gallbladder function, favors gastric and intestinal secretions, aids

from the stomach in obstructive cases, lessens the intra-abdominal tension, thus minimizing the danger of spreading infection and diffuse peritonitis.

7. Is of psychological benefit, increases the comfort of the patient, and permits rest and sleep.

8. Increases strength and vitality, hastens recovery, and reduces mortality rate.

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SOME PUBLIC HEALTH ASPECTS OF PARASITES OF MAN*

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Minneapolis

THERE is at present a dearth of information regarding the parasitic diseases in the teaching of public health nursing. Such authorities as Park, Brainard, Wright, Kelly, Bradshaw and others do little more than to mention them. In actual fact there is a growing need for a consideration of the subject due to the increasing possibility of mechanical dissemination of disease from endemic areas. This phenomenon has been noted in the past with plague in California during the early part of the present century, and yellow fever outbreaks in various areas of this country during relatively recent years. The possibility of dissemination of harmful animals is clearly put by Howard (1931) in his semi-popular account "The Insect Menace."

My discussion will be confined as much as possible to local problems. In confining it thus I shall draw substantially upon notes made from six years of observation on local parasitic forms. I shall stress methods of infection and control for it is in applied parasitology that medical-minded people are especially interested.

Most parasitic animals occur in four of the major groups or phyla of the animal kingdom: (1) the Protozoa, or uni-cellular organisms; (2) the Platyhelminthes, or flatworms; (3) the Nematelminthes, or roundworms; and (4) the Arthropoda, including the insects and their allies. Members of this latter group are of importance primarily as vectors of disease and will be considered here only in that rôle.

PROTOZOA

Not all protozoal infections have been shown to be harmful. However, the incidence of pathogenic and non-pathogenic species is higher locally than one might suppose.

In considering the occurrence of intestinal protozoa two types of evidence may be considered: (1) the sample taken may represent cases showing clinical symptoms making an examination desirable; or (2) it may include all of the individuals in a given area, both the sick and apparently

well. The first type of incidence is termed "clinical incidence" and the latter the "true incidence" as pointed out by Brown (1932). Unfortunately no data have been published relative to the true incidence in a Minnesota group. On the other hand, Brown, reporting studies made at the Mayo Clinic, found a clinical incidence of 5 ± 1 per 10,000 for *Endameba histolytica* in 20,975 patients from Olmsted County, examined during the period from 1926 to 1931. Riley (1929) gives another summary of the clinical incidence of protozoal infections in a group studied locally. In a series of 500 cases among ex-service men referred to the laboratory for microscopic examination, 162 were positive for protozoa, exhibiting 206 infections. Riley found ninety-five single infections, thirty-nine concurrent infections with two species, seven with triple infections, and three with quadruple infections. In the 500 cases examined *Endameba histolytica*, the cause of amebic dysentery, occurred in seven cases, or 1.4 per cent. This clinical incidence compares closely with the true incidence reported by Thomas and Baumgartner (1925) who found 1.7 per cent infection in 1,100 inmates of a New York institution. On the other hand, it is much lower than the clinical incidence reported by Kofoid (1926) of the California State Board of Health, who found a 13.1 per cent infection, or by Kessel (1930), in Los Angeles, who found 9.8 per cent infection. These latter reports, however, are from areas where climatic conditions are recognized as more favorable for the perpetuation of parasitic diseases.

Faust (1931) in studies in New Orleans and the American tropics finds a much higher percentage of infection than does Riley. In New Orleans approximately 1,000 persons were studied who were classified as children under twelve years from welfare clinics, a similar group of children from wards in Charity Hospital, and a series from the obstetric service of Charity Hospital. To this group are added data concerning 181 medical students, 243 ambulatory clinic patients and 199 private lay patients. Under six

*Presented to the Public Health Nurses at the University of Minnesota, May 2, 1932.

years of age, infection was light (about 3 per cent). It increased up to about thirty years and then decreased at about the same rate as the increase. The highest rate of infection (25 per cent) was found in obstetric cases. Faust (1932) reports two cases of natural infection with this parasite in dogs in New Orleans.

In addition to *Endameba histolytica* Riley found four other species of amebæ in his studies. *Endameba coli* occurred in 14 per cent of his cases; *Endolimax nana*, 11.2 per cent; *Iodameba bütschlii*, 2 per cent; and *Dientameba fragilis*, 2 cases. These latter three species are all within the size range of the pathogenic species and therefore must be very carefully studied morphologically before a diagnosis is made.

These studies show that amebic dysentery is an important factor in public health even where hygienic conditions are recognized as favorable. Where hygienic conditions are less favorable, and where winter temperatures are not prohibitive to winter infection more cases occur. While but 1.4 per cent infection looks small, if we consider the clinical incidence of the population as a whole it takes on tremendous magnitude.

The rôle of intestinal flagellates as etiologic agents in gastro-intestinal disorders is not clearly defined. Many workers consider that the so-called "flagellate diarrhea" manifest especially in children is due to *Giardia lamblia*. Other more cautious workers concur with Hegner (1929) in stating that it is not an established fact that this flagellate provokes the diarrhea. There is, however, a certain amount of evidence which might indicate that this flagellate, and others, notably *Chilomastix mesnili*, *Trichomonas intestinalis*, and the vagina-inhabiting *Trichomonas vaginalis* might be pathogenic. Typical of the positive evidence is that presented by Kessel (1930) in which a higher amount of gastro-intestinal disorder is found among persons harboring flagellates than in groups negative for protozoan infection, or positive for commensal amebæ. Kessel found twice as many children harboring *Giardia lamblia* exhibiting gastro-intestinal symptoms as adults. He also found an increased incidence of *Chilomastix* and *Trichomonas* in cases showing symptoms of gallbladder disease and duodenal ulcer.

Riley (loc. cit.) found *Giardia lamblia* in 5 per cent of his cases, *Chilomastix mesnili* in 6.8 per cent and *Trichomonas intestinalis* in 9.4 per cent.

The occurrence of *Giardia* is higher than that reported by Lynch (1928) from northern Texas.

The vagina inhabiting species of *Trichomonas*, *T. vaginalis*, is found by Dr. Mass of the Swedish Hospital in 90 per cent of the cases of unexplained leukorrhea.

Only one species of ciliate is of importance as a parasite of man. This is *Balantidium coli*, a species also present in hogs. The primary site of infection is the large intestine, although cases have been reported with iliac infection. The host tissues seem to be dissolved by ferments, thereby producing ulcers and subsequent clinical symptoms such as diarrhea. Locally, hogs are commonly infected. Cases have been reported from man in Minnesota, although these are rare. In certain tropical and subtropical areas it is a rather common parasite of man.

In certain areas much of the lassitude of individuals is attributed to one of two well-known diseases. If mosquitoes are present malaria is the probable factor; if absent, the afflicted population usually suffers from hookworm infection. Although Minnesota is far removed from the recognized malarious areas as defined by Maxcy (1923) there have been cases which have apparently originated locally. Through the courtesy of Dr. McDaniel of the Minnesota State Board of Health many of these have been compiled and are here reported.

Since 1913 forty-nine cases of malaria have been reported from Minnesota. While many of these were imported there is evidence that certain ones have originated locally.

A typical case of latent malaria is found in case No. 32, a male twenty years of age, who was enlisted in the Texas National Guard in the summer of 1916. He was in the hospital at that time for five weeks with malaria. After treatment he was released in apparently good health. Shortly after he moved to Minneapolis. On May 5, 1917, he reported at a Minneapolis hospital presenting a typical case of malaria.

Recently a case was reported from Winona which apparently had local origin. During the summer of 1929 a fireman in the employ of the city became ill with malaria. He had not been out of the city for several years. On July 2, 1929, he had severe chills and fever. On July 19 malarial parasites were found in the blood by diagnosticians of the State Board of Health. Following treatment he recovered. This case is thought to

be due to the infection of local mosquitoes by tourist traffic from endemic areas. Other cases of this sort are on our local records. It is probable that if it were generally known that the disease may occur here even more cases would come to light.

PLATYHELMINTHES, OR FLATWORMS

Two types of flatworms may affect man. These are the flukes, or Trematoda, and the tapeworms, or Cestoda.

Locally we have little difficulty due to trematode infection in the strict sense of the term. Undoubtedly some are imported in Oriental students, but these cases are so rare as to escape attention. There is, however, a very prevalent type of dermatitis contracted by bathers from our local lakes which the writer and Dr. Greene (1928) have termed "swimmers' itch." This type of infection was found previously in Michigan by Cort (1928) who described it under the name "Schistosome Dermatitis." Cort found the etiologic agent was an immature blood fluke which will bore into the skin of man. The blood flukes, as a group, enter their hosts actively through the skin in the cercarial stage and, if the host is the proper one, they pass into the blood stream to mature. In this case the species is a non-human one which will enter the skin of man, producing the wheals, inflammation and the pustules characteristic of the infection. The organism causing swimmers' itch locally is *Cercaria elva*. Cort (1928) found other furcocercous or forked-tailed cercariae which would produce similar infections. That this type of infection is a widespread phenomenon is borne out by reports of it in England, in Canada, and by letters to the writer from many areas of the United States and Canada from physicians who have noted cases.

Tapeworm infections come from three general sources: (1) fish (*Diphyllobothrium latum*); (2) pork or beef (*Tenia solium* or *Tenia saginata*); and (3), from food contaminated with feces or containing the intermediate hosts of tapeworms.

The two large tæniae of man, *Tenia saginata* and *Tenia solium*, are contracted from eating raw or imperfectly cooked beef or pork, respectively. Occasionally these tapeworms are referred to our laboratories for diagnosis. Undoubtedly many instances of these parasites are

wilfully concealed, and many are overlooked. In local cattle, taking the north central states as a group, there is an infection of about 2 per cent of the animals which are killed for food purposes, but are subsequently diagnosed by the meat inspector and condemned as human food. In local slaughter houses not governed by the Bureau of Animal Industry regulations, this 2 per cent is not condemned and is a factor in public health.

It seems rather certain from studies of Stiles and others that *Tenia solium* is rare in this country and fast becoming almost a biological curiosity. Its relative rareness is expressed in a statement of a meat inspector of the Bureau of Animal Industry to the writer that he had seen three cases since 1895. Local cases of this tapeworm have been found, however, one in recent years from the Glen Lake Sanitarium.

With *Tenia solium* there is not only the danger of intestinal infection with the adult worm but there is also a grave danger of contaminating food of man with the eggs of this species. Such eggs pass to the intestine, minute larvæ are liberated which enter the blood stream and are carried to various parts of the body. Here they eventually form small cysts about the size of a pea. The danger of these is manifest when they locate in the conjunctivæ or the central nervous system, where they produce a grave type of infection. Infection in man with cysts of the pork tapeworm is clinically termed "cysticercosis."

The fish tapeworm of man, *Diphyllobothrium latum*, is especially prevalent in the Baltic areas, along the coast of the North Sea and in the lake regions of northern Switzerland and Italy. Early reports in this country were from foreigners from infested areas of Europe. More recent reports from along the Great Lakes area have shown this to be an endemic region for this parasite.

The life cycle of *Diphyllobothrium*, unlike most tapeworms of man, involves two intermediate hosts. The adult parasite lives in the intestine of man, bears and dogs. Here it discharges eggs which pass into water, where they hatch into small, free-swimming, ciliated organisms. These are taken up by a water-flea, *Cyclops*, where the first larval stage is undergone. *Cyclops* is then eaten by fish and a second worm-like larval stage develops in the muscles. If these fish are eaten, poorly cooked or raw, infection results.

Locally *Diphyllobothrium* infection is of considerable public health importance. Through the studies of Riley, Nickerson and Magath, this tapeworm is now considered one of our most common species. Riley (1924) reports a total of 65 cases of this tapeworm in man for Minnesota alone. In certain areas practically 100 per cent of the fish are infected with the cystic stage.

Two species of tapeworms, *Hymenolepis diminuta* and *Hymenolepis nana*, which infect man occur in rats and mice.

In rats about the Twin Cities *Hymenolepis diminuta* may occur in from 5 to 95 per cent, depending upon the type of habitat of the host. In garbage dumps and abattoirs the percentage is the lowest, while in grain bins, cattle or hog feed lots practically all of the rats are infected. This variation in percentage is in direct proportion to the prevalence of a proper intermediate host for the parasite. In the case of this tapeworm a wide variety of arthropods have been found to serve as the intermediate stage, namely, certain larval and adult moths, earwigs, grain beetles, which are the most common hosts under certain conditions, dung beetles, larval fleas of several species and a myriapod (Nickerson, 1911). Infection results by the ingestion of these intermediate hosts which had previously fed on the egg of the adult tapeworm. Infection may be contracted by the contamination of food, or by an infant picking up the crawling insect and putting it into its mouth.

Numerous cases of this parasite have been reported from man. Riley and Shannon (in 1922) record 61 cases distributed geographically in Brazil (19), United States (16), India (8), Italy (7), Nicaragua (3), and one each for Argentina, Belgium, Cuba, East Africa, Grenada, Japan, Martinique and the Philippines. More recently (Keller, 1931) has added additional cases to this list until at present some 100 cases of human infection are on record for this parasite. It is of interest to know that during the last decade some thirty-nine cases have been added, twenty-three of these by one worker (Chandler, 1927) in his hookworm studies on some 10,000 individuals in India. The rest of the cases are distributed over the United States. There is little doubt that with more careful diagnoses this parasite will be found to be rather a common one in man.

Hymenolepis nana is likewise a common parasite of rats and mice locally and can be contracted

by man. In an examination of some 500 rats the writer has found this parasite in 10 per cent. No local studies have been made on its occurrence in mice, although it is also reported for that host.

Prior to the war this parasite, like *Hymenolepis diminuta*, was considered an incidental parasite of man. The disease factor of the war gave tremendous impetus to microscopic examinations and these studies have led to the conclusion that this is indeed a common parasite of man; probably the most common of the tapeworms. An early report (Frey, 1915) reflects the condition as it is to be found under certain conditions. He found in an examination of 270 children in a Texas orphanage an infection of 32 per cent. It must be remembered, however, that conditions as encountered in an orphanage are much more favorable for infection than they would be in the public as a whole. Such extreme infection would indicate crowding, and certain laxity in the care of the children. Infection with this parasite is by the direct ingestion of eggs.

The rôle of the dog as a carrier of disease is discussed by Joannides and Riley (1925).

Several species of tapeworms of both dogs and cats affect man. These are *Dipylidium caninum* and *Echinococcus granulosus*. Locally there is evidence that the broad fish tapeworm *Diphyllobothrium latum* is harbored in dogs. Another parasite of dogs and cats which affects man is *D. mansoni*.

Infection with *D. caninum*, the double-pored tapeworm of man, is brought about by the accidental ingestion of dog or cat fleas, or of the biting louse of the dog, *Trichodectes canis*. This tapeworm is largely found in infants (75 per cent of cases) and is contracted by an intimate association with pets. Locally *D. caninum* occurs in 25 per cent of the 102 dogs examined and in about the same percentage of cats.

Echinococcus granulosus is a minute tapeworm living in the intestine of dogs and related carnivores in the adult stage, and occurs in man and some forty other mammals in the cystic state. In man the cyst may locate in the brain, in the muscles, about the viscera, in fact in almost any tissue of the body. In size, cysts may become as large as the head of an infant.

Local cases, such as that of Joannides and Riley (1924), are on record. This interesting case was one of a woman forty-five years of age who had an hydatid in the scapular area

NEMATHELMINTHES, OR ROUNDWORMS

Several varieties of roundworms affect man; some of these are peculiar to him and others contracted from close association with dogs and cats or through the contamination of food by mice. A curious case of the infection of man by a mouse nematode is that of Riley (1919). He found that the common mouse oxyurid, *Syphacia obvelata* would produce infection in man.

Most of us recall cases of children with "worms." "Worms" usually refer to the pinworm, *Enterobius vermicularis*, or the large so-called "roundworm," *Ascaris lumbricoides*. Numerous cases of each of these parasites have come to my attention during the past few years. While *Enterobius* is usually not considered a serious parasite, *Ascaris* infection may be followed by grave results. Intestinal occlusion and perforation both have been reported for this parasite, and "verminous pneumonia" is one of the well-known symptoms of the infection, resulting from the migratory larvæ of the parasite passing through the lungs. *Ascaris lumbricoides* is morphologically identical with *Ascaris suilla* of the hog. There is, however, a certain amount of evidence which indicates that the two are at least physiologically different. The whipworm, *Trichuris trichiura*, is apparently not especially common in this area. In tropical and sub-tropical areas it is a definite factor in public health.

In addition to the above roundworms there are certain species which occur in man which may be contracted from dogs or cats. These are *Toxocara mystax* and *Toxocara canis*, intestinal parasites of the cat and dog respectively. These, however, are relatively rare. In Minnesota *Toxocara canis* occurs in 27 per cent of the dogs and *Toxocara mystax* in about 30 per cent of the cats examined.

The Twin Cities are far removal from the recognized hookworm belt. Still cases are found here which are of singular interest. During the past few months two such cases have come to my attention. The first was one referred to this laboratory for confirmation of diagnosis by Dr. Mass, pathologist of the Swedish Hospital. The patient was an adult, minister, thirty-two years of age. He had been working in Africa since the fall of 1927. On February 8, 1932, he presented himself for medical attention, complaining of weakness, sluggishness, dullness about the head, with difficulty in thinking. These symptoms be-

gan in 1930; since July, 1931, he had been unable to perform any work. His appetite had been fairly good, no blood was evident in the stools, and his bowel movements were quite regular. No nausea or vomiting had occurred. Blood examinations showed a 15 per cent eosinophilia.

On February 12, 1932, three doses of oil of chenopodium, each 1.5 c.c., were given by mouth. This was followed by a severe gastrointestinal upset. Then 1.0 grams of hexylresorcinol was administered. No intestinal inconvenience resulted. Following a purgative of magnesium sulphate hookworms were isolated from the stool.

Subsequent to treatment the patient has been seen at weekly intervals and each time shows improvement. His speech is easier, he feels stronger, and the abdominal pains have disappeared. He has gained 7 pounds in weight.

The second case of hookworm is now under observation. This is a male, aged 19, who had lived in Porto Rico from 1922 to 1928. Four years ago he came to this area, where he has remained ever since. At the age of fourteen or fifteen he was treated for hookworms. After treatment he remained in Porto Rico for one year and then moved to Madison, Wisconsin, for a period of two years. He then came to Minneapolis, where he has remained for two years. During the past four years he has not been in the hookworm belt.

He came to the Students' Health Service recently complaining of malaise, sluggishness, and "not feeling up to par." The blood readings showed an eosinophilia of 22 per cent, a hemoglobin of 90 per cent and a total leukocyte count of 8,100. Stool specimens were submitted and larvæ were found which were diagnosed by Mr. Wallace as *Strongyloides*. A subsequent stool referred to the writer and examined about three hours after being passed showed also numerous ova of *Necator americanus*. It is reasonable to suppose, although not absolutely certain, that the above infection was contracted in Porto Rico some four years ago and has been present since that time. Similar cases have been reported by other workers. The Caldwells (1931) find no evident loss of hookworm burdens during a period of four years.

The question may arise: What is the present status of hookworm infection? Stiles (1930, 1932) very admirably states the case. He finds

that among boys of school age, hookworm infection is still widespread, geographically, in our Southern States. This is not only true in the South but has been found by other workers to be the condition elsewhere in tropical and sub-tropical areas. In 1932 Stiles states: "In 1902, the first task was to convince an unbelieving public that hookworms were not a myth but a serious and widespread menace to health: in 1932, the first task is to disillusion a credulous public which believes that hookworm disease has become very rare in the United States—a belief not supported by theoretical considerations, clinical observations, or microscopic examinations."

One of our major local parasite problems is trichinosis. It occurs in about twelve per cent of our local cats and up to 33 per cent of the rats. Recent epidemics of this disease in man have been compiled and placed at the disposal of the writer by Dr. McDaniel. The essential details are as follows:

Case 1.—Miss W. visited the home of E. S. in Fargo, North Dakota, October 22 to 25, 1922, returning home on the latter date. She ate sausage while a guest of E. S., and brought some of it home with her for her parents. This was promptly eaten. The sausage was in casings, smoked, but uncooked. Following the ingestion of it there occurred in all five who had eaten, an edema, loss of appetite, malaise, nausea, cramp-like pains in the abdomen, and constipation. Mrs. W. had a temperature of 100°-104° F. for a few days. After a few days muscular pains were felt, especially in the calves, and all patients raised blood-stained sputum. The recovery was gradual: eosinophilia ranging between 13 and 28 per cent.

Case 2.—About November 1, 1925, there was prepared in the home of H. K., Sioux Valley Township, a batch of smoked sausage from a home-killed hog. This was eaten uncooked by all in the K. family (twelve individuals) but a fourteen year old boy, L. They had anorexia, slight fever, and gripping abdominal pains as the initial symptoms. A few of them vomited. Later the temperature rose to 101° to 105° F., the pulse was rapid, and the edema of the face became more pronounced. During the third week all had a bronchial cough. The eosinophilia ranged from 4 to 64 per cent in the individuals infected. Three fatalities occurred in this family, one on December 11, one on December 13, and one on January 3.

In addition to these cases a sister of Mrs. K. ate some slices of the sausage, two school children ate some of it given them by the K. children, and some of it was obtained by the family of Mr. W. In the latter family of six, two children who did not eat sausage were not affected. All the others presented mild cases. Another sister of Mrs. K. later ate sparingly, and moved to Iowa, where trichinosis was diagnosed.

Case 3.—Seventeen cases at Two Harbors, Minnesota,

were reported February 9-10, 1930, thirteen of which were school teachers. All had partaken of a lunch ham sandwiches, angel cake and coffee served at the Teachers' Whist Club January 13th. All became ill. One pound of boiled ham used was run through the meat chopper at the request of one of the party. Although the dealer insisted that the chopper had been cleaned before using, trichinosis resulted. It was found that the chopper would retain a quarter of a pound of meat and had probably been used previously to grind raw pork. Symptoms were typical as in the previous cases. Eosinophilia ranged from 14 to 40 per cent.

There is no doubt that many cases of trichinosis go undiagnosed. Where studies have been made on man, post-mortem, surprisingly high rates of infection have been found, and in tracing the histories of these individuals vague recollections of rheumatic symptoms have been described. Queen (1931) secured 344 diaphragms from necropsies in Rochester, N. Y., and found a 17.5 per cent infection. In another series of 58 diaphragms in Boston, 27.6 per cent infection was noted. In none of these cases was there any record of diagnosed trichinosis.

It can clearly be seen from these studies that man is continually menaced by great numbers of parasitic diseases, most of which are overlooked by the average medical practitioner. Domesticated animals, such as the dog and cat, aside from being ideal pets, aid in the dissemination and the perpetuation of such diseases as tapeworm infections, roundworm infections, amebic dysentery and trichinosis. Likewise important infections in man may be contracted from rats and mice. In addition to transmitting numerous helminth infections, rats can experimentally be infected with *Endameba histolytica* (Kessel, 1923, *et al.*) and may be, like the dog, an important reservoir for that infection. The high incidence of trichinosis in local cats and rats is a real menace to public health.

Besides having certain local diseases of importance, modern transportation favors the importation of tropical diseases which should give us greater concern. If their presence is recognized by the general practitioner much of the confusion existing in diagnosis could be eliminated.

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MAKING "THE PUNISHMENT FIT THE CRIME"

A recent article in *The Lancet* casts an interesting light on the modern sense of values. An untrained layman, who had appropriated the name and degrees of a distant physician, was finally discovered in his impersonation. Although he had practiced medicine unlawfully for years, even posing as an expert witness in the courts, the total penalty for his grave offenses was three years' penal servitude.

In commenting on this episode *The Lancet* draws some interesting comparisons between the penalties for falsely representing oneself to be qualified in various professions. A fine of twenty pounds is considered sufficient for fraudulently holding oneself out as a physician. Architecture fares better, with a fine of fifty pounds for the first offense and one hundred for subsequent violations. To dentistry goes the deepest obeisance, with a penalty of one hundred pounds. *The Lancet* draws the only possible conclusion. "It is more than twice as serious, therefore, to pretend to be a registered architect and five times as serious to pretend to be a dentist, as it is to pretend to be a regis-

tered medical practitioner." A sense of proportion is unfortunately no constant attribute of the law.

Americans cannot afford to scoff at Great Britain in this respect—our own legal structure is too definitely vitreous. The case cited by *The Lancet* is typical of the reluctance American as well as British courts show to invoke a really deterrent penalty for violation of the medical practice laws.—*New York Med. Week*, March 26, 1932.

MONTGOMERY WARD & COMPANY WITH-DRAWS LABORATORY SERVICE

Following publication of the report of the A. M. A. Chemical Laboratory relative to its survey of the urine examining service conducted by Montgomery Ward & Company many physicians wrote to the firm asking for an explanation of this project. In reply a letter by the president of Montgomery Ward & Company has been sent to many physicians and stockholders in which it is stated that the urinalysis service has been discontinued. (*Jour. A. M. A.*, May 21, 1932, p. 1813.)

PRESIDENT'S LETTER

WITH the world still in the throes of a planet-wide depression we can be certain that proposals for various forms of insurance will be made to the different legislative assemblies, with the aim of affording relief to those most acutely stricken. Undoubtedly health insurance under either national or state control will be one of the types proposed.

The medical profession should keep clearly in mind certain fundamentals. The various countries, when they adopted health insurance, assumed that the incidence of sickness and the cost of medical care could be accurately calculated by statisticians, and that the data so obtained could serve as a basis of estimating the cost. This has been proved fallacious because the number of cases of sickness per year has rapidly increased under health insurance. When health insurance enters, the will to get well diminishes and withers, especially in times of stress when the cash payment during illness is so helpful to the family budget. This fact is well known to all medical men who have to do with industrial insurance, but it is largely ignored by politicians and social workers. As a matter of fact, no health-insurance law has been formulated primarily as a health measure; they all have been enacted to meet the problem of poverty in time of sickness. No figures have been given that show that under health insurance either the health of the people is better or that there is a lessening in the number of days of sickness per capita. Neither is there any indication that the decline in the death rate is any greater in those countries which have health insurance laws than in comparable commonwealths without such laws. Improvement of health, with consequent lessening of illness and lowering of the death rate, are, after all, the goals that the medical profession is aiming at, and it should not be deflected from its purposes. The program as outlined and advocated by our recognized agencies, wherein policies of public health education, such as examination of school children, care of the infant, and hygienic measures are all advocated, should be pushed vigorously.

Although the attitude of many members of our profession is unfavorable to health insurance, we must bear in mind that there is no real opposition to the principle of health insurance on the part of the profession in the countries where it exists. While there is a wide variation in professional incomes under insurance in these countries, it appears that the average physician is paid better than he was before.

It behooves us, therefore, to acquaint ourselves with the intricacies of the various plans in other countries. The facts are that the evils of insurance decrease in proportion to the degree in which responsibilities are intrusted to the medical profession. The countries wherein the working of the insurance plan runs the smoothest are Denmark, France, Great Britain and Sweden, where responsibility is so placed. We must develop the leadership to meet the situation. The Minnesota State Medical Association has a number of members who are giving much thought to these problems, and when the time comes, as it surely will, for discussion of them with our state legislators, these members will have information and knowledge that will be helpful to all concerned. Our legislative committee already has the confidence of the majority of our legislators and will be looked to for advice.

The trend in medicine, as in other lines, is social, and whereas in the past we have accorded recognition chiefly to those men who have been leaders in the scientific affairs of our profession, we must now give due credit to those who are active in the social phases, and look to them for leadership.

M. S. Henderson.

President,
Minnesota State Medical Association.

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EDITORIAL

MINNESOTA MEDICINE

Official Journal Minnesota State Medical Association,
Southern Minnesota Medical Association, Northern
Minnesota Medical Association, Minnesota Academy of
Medicine, and Minneapolis Surgical Society.

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Vol. XV AUGUST, 1932 No. 8

DR. ROBERT EMMETT FARR

The recent premature passing of Dr. Robert Emmett Farr of Minneapolis demands some mention in our pages of the active part played by Dr. Farr in the first years of the existence of the Journal.

In that period of travail, pending the birth of MINNESOTA MEDICINE, Dr. Farr was one of those who visioned a state medical journal representative of the medical profession of the state as a whole, owned and controlled by the Minnesota State Medical Association, and ethical in its advertising department. Dr. Farr was one of those who could put aside minor considerations

in order to attain the really worth while objective—a state owned and controlled journal.

Serving for eleven years as an active member of the Editing and Publishing Committee and as the first committee chairman, he was devoted to the interests of the magazine and gave freely of his valuable counsel.

The support of a man like Dr. Farr was inestimable. He was much interested in the welfare and growth of the Journal and, as became his nature, was not averse to a fight for what he thought the right course. He was ever ready to see the humorous side of a situation and had an inimitable way of relating a comical incident.

The tragic late years of Dr. Farr's life are well known to his many friends and acquaintances. Fate seemed against him. In spite of mental and physical suffering his indomitable will enabled him to continue to some extent his scientific work.

MINNESOTA MEDICINE is proud to be numbered among Dr. Farr's many friends.

EDUCATING THE DENTIST IN PROCTOLOGY

Recently the following printed letter was received by a Twin City dentist:

"In reading over the enclosed reprint on the Postoperative Care of Rectal and Anal surgical cases, it becomes evident that the care of Rectal diseases is a specialty which requires not only training in this field but equipment adapted to this particular work.

In many ways the position of the D.D.S. and the physician specializing in proctology are analogous. Patients go to a dentist because they recognize him as a man with specialized training in the oral field; they would not expect to get the same high grade of service in a dental problem from their family physician because they know his training and equipment are not adapted to this work.

The thought occurs to me that the D.D.S. who is familiar with these facts will be in a better position to refer any patient he knows to be having rectal trouble to someone having the requisite training and facilities to do this work most effectively. I will attempt from time to time to mail you reprints of papers published under my name in the current medical literature pertaining to rectal diseases.

Yours very truly,"

So our dental confreres are being initiated into the ancient and holy mysteries of proctology via

the well-known and widely used reprint route, which causes us again to become acutely conscious of the discouraging truth that we always seem to be peacefully slumbering when old man opportunity rings our doorbell, and when we finally do arouse ourselves we get, instead of the cordial handshake, a bang on the head with a stuffed club, which is the usual fruit of indolence. This time we haven't been caught napping. We are, so to speak, up on our toes; we perceive faint but at the same time very definite glimmerings of a great idea in this newly-opened field of interprofessional relations. In fact, we can see boundless wastes which haven't been charted, the fathomless depths haven't been plumbed . . . in this connection we stand precisely where the radio did when Paul Revere mounted his horse and went calling that night in Middlesex. "Beyond the Alps," Napoleon told his troops, "lies untold wealth." Onward then, to the lush valleys of interallied contacts; let no man shirk his duty.

Think of it; A hundred thousand park policemen leisurely sipping their morning coffee, opening their mail and finding an article on "Gonorrhea and bosky dells." Imagine the western plains teeming with sheep-herders who are hungering for a well-written arbeits on "What a sheep-herder should know about sex." Consider the joy of a member of the American Association of Allied Peanut-Salters, Local No. 514, as he eagerly devours an article on the diagnosis of diabetes. Is this progress? Why, the thing is practically limitless . . . the immensity of the project frightens us. When it comes right down to brass tacks, what do bill-posters know about varicose veins, or pneumothorax, or multiple sclerosis? Candor compels us to answer, nothing. What about street-car conductors and thrombocytopenia? Goodness knows, that, what with the depression and the hot weather and all, they are having enough trouble without this additional handicap. Think of the thousands of moving-picture ushers who are daily doing their best, giving their all, and being forced to struggle along in complete ignorance of tularemia and coronary thrombosis. It's appalling!

However, as long as we were smart enough to think of it we are going to be smart enough not to divulge any more of the details of the plan. Besides, we intend to have it copyrighted, so remove that gleam of avarice from your eye, it's no use. Where the thing is going to eventually lead us, we can't be certain, but as Alice said to the Cheshire cat in "Through the Looking-glass," "Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to," said the cat.

"I don't much care where," said Alice.

"Then it doesn't matter which way you go," said the cat.

JONATHAN CARVER

I, John Lettsom

Blisters, bleeds and sweats 'em;

If after that they please to die,

I, John, lets 'em.

This doggerel, one of several penned at the expense of John Coakley Lettsom, a London doctor of the eighteenth century, is of special interest to Minnesotans, because of Lettsom's relations with that intrepid explorer of this Northwest, Jonathan Carver. Supposed to have first met Carver in the guise of a highwayman, Lettsom is said to have given the financially embarrassed explorer assistance, and cared for him in the illness from which he died in 1780 "absolutely and strictly starved." It was Lettsom who at his own expense published the third edition of Carver's *Travels* to assist the widow and children of the explorer. A perusal of one of these editions furnishes fascinating reading to one historically minded. Descriptions of native vegetation, animal and bird life, the Indians and their languages, prove Carver to have been an unusually intelligent observer and facile writer.

A native of Connecticut, where he was born about 1710, he was placed with a doctor in Elizabeth Town, Connecticut, but at the age of eighteen he became a soldier. His experiences in Indian warfare doubtless were seasoning experiences for his later attempt to find a water route to the Pacific by the way of the Great Lakes and the Oregon (now Columbia) River. His book indicates that he had a very accurate idea of the waterways of Wisconsin and Minnesota, but his conception of the distance of the source of the Columbia River from Minnesota was grossly in error.

As his book nicely describes, Carver proceeded by canoe up Green Bay, through Lake Winnebago, up the Fox River and thence by portage to the Ouisconsin (Wisconsin) River. Down the Wisconsin to Prairie du Chien, thence up the Mississippi to Lake Pepin, the beauty of which greatly impressed him, he describes the unique cave in the cliff below the Indian Mounds in Saint Paul known as Carver's Cave to early Saint Paulites, and the then beautiful Saint Anthony's Falls, located somewhat below their present site in Minneapolis. Proceeding up the Mississippi as far as the Rum and Saint Francis Rivers, he returned to the Minnesota River (then known as the Saint Pierre), following up its course some 200 miles.

Friendly with the Indians, Carver was supposed to have received a deed to a large tract of land to the east of the Mississippi River extending from Lake Pepin to Saint Anthony Falls. This supposed deed led to many hearings in Congress between the years 1806 and 1824 due to efforts of Carver's descendants to prove title to

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the land. Congress ruled against the validity of the claim.

Although Carver's two and a half years of exploration of this part of the country in 1766 followed. Father Hennepin's visit by about 100 years, his accurate record of his observations furnishes a valuable record of the district before it became settled by the white man.

MISCELLANEOUS

SOCIAL INSURANCE UNDERMINES NATIONAL CHARACTER

EDWARD H. OCHSNER, M.D.
Chicago

Parasitism is today the corroding canker of modern civilization and anything which favors its growth and dissemination should be unequivocally condemned and most vigorously opposed.

The proponents of Compulsory Health Insurance or National Insurance, as it is called in England, reiterate again and again that these and the dole are totally different. In name and administration, yes; in effect, no. They both encourage people to want something for nothing or much for little, which in effect makes parasites out of them. Almost endless illustrations supporting the statement that Compulsory Health Insurance and the dole are alike in effect could be produced but one will have to suffice. Liek, in his book, recounts the following experience he had while a Krankenkasse physician in Germany. A middle-aged man came to him for an examination with the view of securing sick benefit. Liek examined the patient carefully; could find nothing the matter with him; in fact, found him an unusually well-developed and robust individual. He told the man the facts and elicited the following story. The man told Dr. Liek that he was the only man in his village that did not get some kind of a government stipend, sick benefit or dole or pension and that everybody was ridiculing him because of this.

No one who is at all familiar with Bernard W. Shaw's writings will ever accuse him of being in favor of the present economic system in England. He has the following to say about the dole: "The Labor Party has just twisted conditions all around. They taxed people who live on unearned income, and create their own leisured class—people who live on the dole. The dole is not much but if you have four or five in one family living on dole you have a hostel of leisured people living very well. That must cease."

The whole Social Insurance scheme is based on the ethically indefensible theory that individuals are entitled to things that they have not earned and on the politically unsound doctrine that society owes every citizen a comfortable living whether or not he repays society by doing his fair share of the world's work. Under Compulsory Health Insurance the individual who works only half-time is entitled to just as much free medical service and is likely to get much more in sickness benefits than he who works full time. Not only this; it actually encourages immorality and riotous living as the following personal experience well illustrates. As a young man I worked two seasons in a lumber camp. The camp in which I lived comprised between thirty-two and forty men. Of this number only one did not use intoxicating liquor; only two did not use tobacco; and half of the men spent their hard-

earned wages either at the saloons in the nearby town or went regularly to the Island or did both. Those who are familiar with the Islands of the upper Mississippi River need no explanation as to why they went there. I wonder how Health Insurance, insuring these men for loss of time and providing free medical care for them, would have prevented their doing the very things which were the cause of much of their sickness. For my part, I believe that a larger per cent of them would have gone to the Island if they had felt that they would be protected against loss of time and that they would receive free medical care if they became sick. Health Insurance would actually have increased not only sickness but immorality as well in this camp.

A recent survey of five thousand students at the University of Minnesota found only ten, or two per thousand, with positive Wassermanns. Careful surveys in various parts of the country indicate that about three per cent, or thirty per thousand, of the general population of the United States is syphilitic. A Wassermann examination of three thousand prisoners in the Southern Illinois Penitentiary revealed the fact that three in ten, or three hundred per thousand, were syphilitic. This same ratio undoubtedly pertains to the class most criminals come from and raises the average in the general population.

It is a well-known fact that alcoholics and those suffering from venereal diseases are much more liable to loss of time from sickness than are those not so affected. What right has any just government to take of the earnings of the two first groups without their consent and give them to the third group? A just and humane government protects the weak from oppression and exploitation by the strong and unscrupulous; but a just and wise government does not penalize the strong, industrious, clean-living and thrifty and favor the weak, lazy, shiftless and immoral. Giving the weak, lazy, and shiftless undue advantage over the strong, industrious, and thrifty actually penalizes and handicaps the latter, interferes with the law "of the survival of the fittest," and must eventually lead to race degeneracy. If the white race persists in this course long enough, the "yellow peril," so often glibly and jokingly mentioned, may become a real menace to western civilization.

All independent writers on the subject state, and even the proponents of Compulsory Health Insurance have to admit, that it has tremendously increased occupational neuroses, and that is just what was to be expected and was expected by those who know human nature and can see just a little further than the ends of their noses.

The following quotation from a paper by William H. Hicks is pertinent: "In accident cases, where the question of compensation is involved, conditioned reflexes are sometimes created by the patients' environment that not only retard recovery but instigate additional symptoms; or may lay the foundation for successful malingering."

One of the worst features of Compulsory Health Insurance is that if continued long enough it will crush out of character the three I's—Independence, Industry and Integrity. Such schemes are as Guglielmo Ferrero, the eminent Italian historian, rightly says, "artificial," and "While they tide over trifling evils of the moment, they lay up for the future troubles and difficulties and dangers of infinitely greater gravity."

(To be continued)

UNDULANT FEVER

Several observers have reported favorable therapeutic results with specific *Brucella melitensis* (abortus) vaccine therapy. Two *Brucella melitensis* variety vaccines have been accepted for New and Non-official Remedies. (Jour. A. M. A., May 21, 1932, p. 1832.)

A FORUM OF THE COMMITTEE ON PUBLIC HEALTH EDUCATION

RESULTS!

Scarcely more than a year has passed since the House of Delegates of the American Medical Association called attention, through the medium of the now famous "Shoulders Plan," to the pernicious and then apparently triumphant policy of bureaucratic governmental medicine set up in the statutes for relief of war veterans.

Has anything been accomplished? Sometimes, no doubt, the individual "tax-paying" member of the component societies wonders where his money goes, wonders what concrete facts can be adduced to prove that his mite in the cause of organized medicine is really bringing results in the advancement of the science and in the protection of the American principle of freedom to heal the ailing. In the matter of veterans' legislation, often referred to in these columns, there is already impressive proof of the efficacy of organized effort in behalf of scientific medicine.

The Congress just adjourned has passed *NO* bill for further federal hospital construction. The Congress has turned thumbs down on *every* attempt to enlarge the bureaucratic intrusion on the private practice of medicine. Incidentally, it is interesting to note that members of the Minnesota Association have been active and important figures in the national Association's fight for freedom of medical practice.

Although the recent Congress has not reduced in any measure the medical aid to the non-service connected veteran, the point is that this Congress, for the first time since the war, has refused to enlarge upon these benefits.

It is of interest to note that the veterans themselves are opposing benefits for non-service connected disabilities as disclosed in the recent petition, signed by thousands of actually war disabled soldiers, sailors, and marines, which has been presented to President Hoover. Read, and see the results:

"This document is directed to showing that not less than \$450,000,000 of the \$928,387,795 appropriation is for veterans who in fact suffered no disabilities in war service.

"The petition has met with nationwide response and is daily being signed by thousands of citizens without regard to party or differences of opinion on any other issue."

This petition goes on to state:

"We petition for the elimination of all expenditures for veterans of the World War who did not in fact suffer disability in war service. We petition for a return to the sound policy in which the World War veterans' legislation was first conceived—just and liberal compensation to the dependents of those who lost their lives in war service and to the veterans who in fact suffered some disability in the war. . . .

"It is believed, on the basis of sound medical judgment, by the substitution of expert medical advice rather than arbitrary Congressional decrees, not less than \$125,000,000 could be eliminated from this item in the fiscal year 1933."

The petition we refer to was presented to the President on behalf of the "National Economy League." The Secretary of the National Economy League who presented in this petition the actual aims of many of the disabled veterans is Captain Archibald B. Roosevelt. The same "Archie" Roosevelt, who, at the age of twenty, led an infantry company into the hell of the Argonne and came out, a disabled veteran, an authentic hero in American military history. The Captain is a son of the Colonel who led the charge on San Juan Hill, President Theodore Roosevelt.

To be sure, many of us feel that the National Economy League would do a greater service if it would as carefully investigate economies to be made under the existing system by utilization of civilian medical and hospital facilities. Such a plan would eliminate the tremendous bill for new federal hospitals and their maintenance without any dislocation of already awarded benefits to veterans.

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OF GENERAL INTEREST

Dr. H. E. Sisk, university of Minnesota, 1931, is now located at Mazeppa, Minnesota.

Mr. Charles Perry Fisher, who has served for fifty years as Librarian of the College of Physicians of Philadelphia, has retired.

Dr. Henry E. Michelson, of Minneapolis, presented three papers before the annual meeting of the Northwest Medical Society, held recently at Spokane, Washington.

Dr. Harold E. Hullsiek, formerly with the Miller Clinic, Saint Paul, has opened offices at 326 Lowry Medical Arts Building, Saint Paul, for the practice of surgery and proctology.

Following the publication of the report of the A. M. A. laboratory of its investigation of the urinalysis service conducted by Montgomery Ward and Company, the management of the mail order house has announced the discontinuance of the service. After all, urinalysis is a part of the practice of medicine and the interpretation of a report, if not the actual performance of the examination, requires medical training.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

NATUROPATH LOSES IN MANDAMUS SUIT

State ex rel. Shenk vs. Basic Science Board

On Monday, May 23, 1932, the Honorable Arthur W. Selover, Judge of the District Court, entered an order sustaining the demurrer previously interposed on behalf of the Basic Science Board in the above entitled law suit. Judge Selover also dismissed the plaintiff's case. The relator, W. W. Shenk, who claims to be a naturopathic physician at 3561 Minnehaha Avenue, Minneapolis, had obtained an alternative writ of mandamus requiring the Basic Science Board to either issue him a certificate of registration in the basic sciences without examination, or show cause for not so doing. The case was a test case designed to determine whether or not naturopaths, so-called, who were practicing in the State of Minnesota in 1927, at the time of the passage of the Basic Science Law, were entitled to certificates without an examination.

The demurrer was interposed by the Basic Science Board challenging the sufficiency of the relator's petition and setting forth that naturopaths who were practicing as such on May 1, 1927, were actually violating the medical laws of this State. The matter was submitted to the Court on oral argument and by brief on April 22, 1932, with the foregoing results.

The legal effect of Judge Selover's ruling is that naturopaths are not entitled to practice healing in the State of Minnesota without first having obtained a Basic Science Certificate and that certificate must be obtained by examination in the Basic Sciences. It has been subsequently announced that an appeal will be taken by Shenk to the Supreme Court of Minnesota. The Basic Science Board was represented by Henry N. Benson, Attorney General, James E. Markham, Deputy Attorney General, and F. Manley Brist. The relator was represented by the law firm of Nash and Nichols of Minneapolis.

NATUROPATHIC "SURGEON" FINED TWO HUNDRED DOLLARS

State of Minnesota vs. Ziegler

On June 15, 1932, the Honorable Julius E. Haycraft, Judge of the District Court of Fairmont, Minnesota, imposed a \$200.00 fine on Fred Ziegler of Elmore, Minnesota, for practicing healing without a Basic Science certificate. Ziegler, sixty-three years of age, a

farmer by occupation, but who claims to be a naturopath, and who has been making a living by bleeding and cupping patients, was arrested on June 13, 1932, on a complaint filed by Mr. Brist, representing the State Board of Medical Examiners. Ziegler informed the Court that he had an eighth grade education in Germany and has no medical education, except that he holds a degree of Doctor of Naturopathy obtained at a school in Minneapolis.

This is the second trip before the Court for the defendant, Ziegler having been fined \$500.00 on June 11, 1930, by Judge A. B. Gislason at New Ulm for practicing without a license. Before imposing sentence Judge Haycraft placed the defendant under oath and inquired as to whether or not Ziegler intended to comply with the law in the future. The defendant positively stated that he would not practice healing in any manner whatsoever.

Splendid cooperation was received in this case from H. C. Lindgren, County Attorney of Faribault County, and Sheriff W. H. Keigley.

OBITUARY

Dr. Robert Emmett Farr
(1875-1932)

In the passing of Dr. R. E. Farr, Minneapolis and Minnesota lose one of their foremost figures in the development of surgery and especially local anesthesia. Dr. Farr was born at Montello, Wisconsin, in 1875, his parents being of Irish descent. He received his early education in the schools of Wisconsin and graduated from Rush Medical College of Chicago in 1900. He served as interne in St. Mary's Hospital at Minneapolis, where he became acquainted with Dr. James Dunn, at that time an outstanding surgeon in Minneapolis. Dr. Farr subsequently became an assistant and partner of Dr. Dunn up to the time of Dr. Dunn's death.

Dr. Farr was married to Miss Mary Scallen, to whom one son, Paul, was born. Dr. Farr was thoroughly devoted to his family but suffered the great sorrow of losing both his wife and only son before his death. Dr. Farr's death terminates entirely that branch of the Farr family.

During his life, Dr. Farr devoted all of his time to the advancement of surgery and local anesthesia. Early he became interested in the development of the latter and pioneered in its advances. He was constantly performing operations under local anesthesia that were not done elsewhere in the hope of developing the method and extending the realm of its possibilities. Many hours were spent in the anatomy rooms and the experimental department of the University in anesthesia research. Much research was carried on with his own private facilities and at private expense. So well known did Dr. Farr become in the development of his art that he had almost daily visitors from all parts of the United States and from many foreign countries. Doctors from England, Canada, France, Australia and Germany frequently came to his clinic and spent many hours learning his technic and watching his operations. Dr. Farr spent a great deal of time and a large amount of money in the development of special retractors, special instruments for bone surgery, special operating room lights, but most of all in the development of a local anesthesia injector. This injector he manufactured and marketed personally because of his desire to supervise its manufacture rather than permit it to be commercialized. Many reels of motion pictures were taken at personal expense for educational purposes. These reels have been exhibited before some of the largest societies of the United States, both East and West. It was Dr. Farr's desire that these films be left

to the profession, and available for educational purposes.

Dr. Farr continually contributed to medical literature; he wrote many articles on the repair of the cleft palate, abdominal surgery, but most of his articles were written upon the use of local anesthesia and the improved surgical technic which he recommended to render this anesthesia more practicable. Dr. Farr's textbook on practical local anesthesia has been acknowledged throughout the world as one of the best. For his pioneer work on local anesthesia, Dr. Farr's name was recommended for the Nobel prize, one of the outstanding awards for advancement in science. Although he never received this recognition, the recommendation came from several prominent societies throughout the United States.

Dr. Farr was a man of personality, ambitious, energetic beyond measure, and always generous. He took a very active part in the development of the Minnesota State Medical Journal and served for a number of years on its editing and publishing committee. He enjoyed an argument, and when he thought he was right he was firm in his stand, and many times has he been heard to commend others for a similar stand and the courage of their convictions, even though they took issue with his ideas. Only those who knew him best are familiar with the fact that he helped to put a number of students through medical school, that he loaned numerous recent graduates sufficient money to get started and that he frequently paid the rent, and helped other physicians when they were sorely pressed. This generosity was never known to the profession.

In his college years, Dr. Farr was a great athlete, a captain of the Rush Medical football team and football coach for Macalester College. A strong, robust young man, later, however, he became the subject of great pain and practically all of his research and greatest efforts were performed under this severe handicap. During the last four years of his life, he was virtually confined to his home by great suffering, during which time, however, he completed the publication of the second edition of his book and wrote the treatise on local anesthesia for a great system of surgery. Only one with his perseverance and indomitable courage would have continued to produce under such a handicap.

Dr. Farr was a past president of the Hennepin County Medical Society, a member of the American Medical Association, Minnesota State Medical Association, Minnesota Academy of Medicine, Western Surgical Association, American Association of Obstetricians, Gynecologists and Abdominal Surgeons, and a Fellow of the American College of Surgeons.

Dr. Farr's death occurred on June 30, 1932, at St. Mary's Hospital. Funeral services were held on July 2 from the Basilica of St. Mary's, well attended by a host of his medical friends and colleagues.

Dr. John Leonard Everlof

1888-1932

Dr. John Leonard Everlof, member of the staffs of Swedish and General Hospitals, Minneapolis, and a lifelong resident of Minneapolis, died Tuesday, July 12, 1932, at his home in Minneapolis at the age of forty-four years.

A practicing physician in the city for the past twelve years, Dr. Everlof was educated at the University of Minnesota, New York University, and the Jefferson Medical College of Philadelphia.

He served as a medical officer in France during the World War and was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, and a Fellow of the American College of Surgeons. Dr. Everlof also was a member of the Minneapolis Athletic club, the University Club of St. Paul, and the Interlachen Country Club.

Surviving him are his wife, Helen; daughter, Sally; his sister, Mrs. T. R. Dahl of Cleveland; and a brother, Sherman, of Philadelphia.

Dr. James Hynes

(1873-1932)

Dr. James Hynes, physician and surgeon in Minneapolis since his graduation from medical school in 1898, died while in his office Thursday, June 7, 1932. He had been in poor health but had continued his practice until a week before his death.

Dr. Hynes was a member of the American Medical Association, the Hennepin County Medical Society, and the Minnesota State Medical Association. He served as city physician in Minneapolis for many years. He was a lifelong resident of Hennepin county, having been born there in 1867.

He is survived by one sister, Mrs. Sarah Mudrean, and a brother, Frank Hynes, both of Minneapolis.

Dr. John L. Montgomery

(1890-1932)

Dr. John L. Montgomery, formerly of Minneapolis and in recent years a resident of Long Beach and Los Angeles, California, died at Rochester, Minnesota, Tuesday, July 5, 1932, following an illness of fifteen days.

Dr. Montgomery was born in Wisconsin in 1890. His medical training was received at Bennett Medical College, Chicago, where he received his degree of M.D. in 1911. Dr. Montgomery came to Minneapolis in 1914 and practiced there intermittently until 1930, when he moved to California.

Dr. Herman Russell

(1871-1932)

Dr. Herman Russell died Wednesday, June 29, 1932, in St. Luke's hospital, Saint Paul, following an extended illness. He was sixty years old and had practiced medicine in Minnesota for thirty years, being associated with the Mayo brothers in Rochester prior to practicing in Saint Paul. He is survived by his widow, Mrs. Martha Russell; a son, Owen, and a daughter, Mrs. John Lindemann, both of Minneapolis, and his mother, Mrs. Charles Russell of Saint Paul.

REPORTS AND ANNOUNCEMENTS of SOCIETIES

MEDICAL BROADCAST FOR THE MONTH

The Minnesota State Medical Association Morning Health Service

The Minnesota State Medical Association broadcasts weekly at 11:15 o'clock every Wednesday morning over Station WCCO, Minneapolis and Saint Paul (810 kilocycles or 370.2 meters).

Speaker: William A. O'Brien, M.D., Associate Professor of Pathology and Preventive Medicine, Medical School, University of Minnesota.

The program for the month of August will be as follows:

- August 3—Signs of Heart Disease.
- August 10—Poison Ivy.
- August 17—Getting Ready for School.
- August 24—Pyelitis in Children.
- August 31—Ulcer and Cancer of the Stomach.

MCLEOD COUNTY SOCIETY

At the recent annual meeting of the McLeod County Medical Society Dr. O. W. Scholpp, Hutchinson, was elected president and Dr. W. W. Klima, Stewart, was elected secretary-treasurer.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

The Northern Minnesota Medical Association will meet in Crookston this year on September 19 and 20. Plans are being made for an interesting program, which is being arranged by the Program Committee, consisting of Dr. A. C. Baker, Fergus Falls, Chairman; Dr. F. J. Hirschboeck, Duluth; Dr. J. M. Hayes, Minneapolis, and Dr. O. O. Larsen, Detroit Lakes.

AMERICAN PUBLIC HEALTH ASSOCIATION

The sixty-first annual meeting of the American Public Health Association will be held this year in Washington, D. C., October 24 to 27, with headquarters at the Willard Hotel.

In connection with the meeting of this association, which includes all public health workers, there will be meetings of the American Social Hygiene Association, the American Association of School Physicians, the International Society of Medical Health Officers, the Conference of State Laboratory Directors, the Conference of State Sanitary Engineers, and the Association of Women in Public Health.

Among the subjects which will be discussed are: mental hygiene, training of engineers, nurses and health officers, diphtheria, air hygiene, bacterial carriers, vital statistics, registration problems.

AMERICAN CONGRESS OF PHYSICAL THERAPY

Announcement is made of the Eleventh Annual Scientific Session of the American Congress of Physical Therapy, which, this year, will be held in New York City. The Hotel New Yorker, with its excellent convention facilities, will be the official headquarters. The convention will be conducted over the week from September 5 to 10, but, officially, the scientific sessions will be run on September 6, 7, 8, and 9. On September 10, Clinics will be given at more than fifteen New York Hospitals.

The preliminary program which has been arranged definitely marks the 1932 session of the Congress as the year's outstanding event in physical therapy. The leading teachers, clinicians and research workers in the field have accepted invitations, and will contribute valuable scientific information to this year's Congress.

Added features in connection with this year's program are the new sections on stomatology and colon therapy. The demand for authentic instruction in these respective specialties has prompted the program committee to ask for scientific contributions from prominent clinicians. The response has been unusual, permitting the organization of a full day's program in each section.

The sections on Medicine, Surgery, and Eye, Ear, Nose and Throat will, as heretofore, include their various group and allied specialties. Cancer, tuberculosis, and arthritis are favorite subjects which will be discussed in interesting symposia. The subject of electrosurgery of tonsils will be adequately dealt with by prominent laryngologists in the eye, ear, nose and throat section.

The outstanding achievement in physical therapeutics, the production of artificial fever by diathermy and its

use in various chronic diseases, will occupy a special place on the program. Representative workers are prepared to present available data of their accomplishments with this newer therapeutic agent.

The Congress meets in the East for the first time in its eleven years of existence. This is the result of numerous invitations which have come from Eastern leaders engaged in the physical therapy science. From present indications this convention should attract the largest attendance in the history of the Congress. Preliminary programs may be secured by addressing the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago.

MINNESOTA RADIOLOGICAL SOCIETY

The annual meeting of the Minnesota Radiological Society was held in Saint Paul on May 22, 1932.

Officers for the coming year were elected as follows: President, Dr. Gage Clement, Duluth, Minn.; Vice President, Dr. Edward Schons, St. Paul, Minn.; Secretary-Treasurer, Dr. Leo G. Rigler, Minneapolis.

The following scientific program was presented:

1. Intravenous Urography as an Aid in Diagnosis—Dr. G. T. Nordin, Minneapolis.
2. X-ray Treatment of Inoperable Carcinoma of the Breast—Dr. Eugene T. Leddy, Rochester, Minn.
3. Round Table Discussion of Cases for Diagnosis—Conducted by Dr. J. R. Aurelius, St. Paul.
4. Clinical-Radiological Conference, Diseases of the Chest—Dr. B. R. Kirklin, Rochester, Minn.
5. Clinical-Radiological Conference, Diseases of the Stomach—Dr. Leo G. Rigler, Minneapolis, Minn.

WABASHA COUNTY SOCIETY

The sixty-fourth annual meeting of the Wabasha County Medical Society was held at Plainview on Thursday, July 7, 1932.

The following papers were presented:

- President's Address—"Some Changes in Thirty-eight Years"—W. F. WILSON, M.D., Lake City
- "New Developments in the Diagnosis and Treatment of Gastric Cancer and Ulcer" (Illustrated by lantern slides)—G. B. EUSTERMANN, M.D., Mayo Clinic, Rochester
- "Osteomyelitis of Humerus Treated with Maggots"—R. C. RADABAUGH, M.D., Hastings
- "Peroral Endoscopy"—D. G. GARDINER, M.D., St. Paul
- "Simplified Infant Feeding"—THOMAS MYERS, M.D., St. Paul

There were twenty-five in attendance, including nine ladies accompanying the physicians.

The following officers were elected for the coming year: President, Dr. W. B. Stryker, Plainview; vice president, Dr. R. C. Radabaugh, Hastings; secretary-treasurer, Dr. W. F. Wilson, Lake City; delegate to State Association, Dr. R. H. Forst, Wabasha; alternate, Dr. D. S. Fleischhauer, Wabasha.

Dr. J. F. Bond, Wabasha, was elected censor for three years. The other censors are Dr. J. A. Slocumb, Plainview, and Dr. W. J. Cochrane, Lake City.

It was voted to hold the next annual meeting at Wabasha in July, 1933.

A resolution was adopted providing for reciprocal relations between the Winona and Wabasha County Medical Societies, and calling for one or more joint scientific and social meetings to be held during the year, alternately in each county, specific arrangements for the same to be made by the two secretaries.

A vote of thanks was extended, especially, to the Plainview doctors for their generous hospitality, and to the guest speakers for their instructive talks.

Dr. W. F. WILSON, *Secretary-elect*.

PROCEEDINGS MINNESOTA ACADEMY OF MEDICINE

Meeting of May 18, 1932

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, May 18, having been postponed one week on account of the A. M. A. meeting. Dinner was served at 7 o'clock and the meeting was called to order at 8 o'clock by the President, Dr. J. C. Litzenberg. There were fifty-six members and two visitors present.

Minutes of the April meeting were read and approved.

The scientific program consisted of the following:

Dr. H. E. MICHELSON (Minneapolis) presented a little girl with xeroderma pigmentosum.

Xeroderma pigmentosum was first described by Kaposi. Since then cases have been reported from almost every country. The condition is definitely due to a sensitivity to the sun's rays. After the first exposure to the sun's rays, usually in the first spring of a child's life, a very severe erythema develops. This is followed by a profuse freckle formation and a degree of dermatitis. Some of the freckles become keratotic and gradually warts develop, which eventually become epitheliomas. In the well-developed case there is to be noted pigmentation, atrophy, telangiectasia, verrucae, and epitheliomas. The prognosis is not good. The epitheliomatous condition causes the exitus.

DISCUSSION

Dr. E. M. HAMMES (St. Paul): If that youngster were kept in the house all the time and out of the sun's rays, would these lesions form?

Dr. MICHELSON: She would have to be kept almost in the dark to avoid enough rays to prevent the condition from progressing.

Dr. F. E. B. FOLEY (St. Paul) presented the new Foley prostatic excisor which he has made.

Dr. O. H. WANGENSTEEN (Minneapolis, U. of M.) read his Inaugural Thesis entitled "Therapeutic Considerations in the Management of Acute Intestinal Obstruction," of which the following is an abstract.

From a pathological point of view there are two kinds of intestinal obstructions, viz., simple and strangulation varieties. In the one there is obstruction of the continuity of the bowel only; the other presents, in addition, vitiation of its blood supply. In many potential strangulation obstructions such as encirclement of the bowel by adhesive bands, intussusception and volvulus, the time factor is a significant item in determining whether the treatment will be that of simple obstruction or of late strangulation in which non-viable bowel must be excised. All strangulation types of obstruction with the single exception of primary thrombosis or embolism of the mesenteric vessels may, when dealt with early surgically, on release of the constricting mechanism be managed as instances of simple obstruction.

Distention, with attendant loss of vital fluids by vomiting, and interference with absorption from the bowel, is the commanding factor demanding attention in simple obstruction. Decompression of the distended bowel in such instances is life-saving, not because it drains off a potent toxin that threatens the organism, but because it relieves tension and allows of continuance of normal absorption. There is no concrete evidence that indicates that there is abnormal absorption from a viable bowel, though there is considerable proof to the contrary. A strangulation infarcted bowel presents, in addition to obstruction to its continuity, the item of blood loss or hemorrhage into the strangulated segment.

Early diagnosis is of extreme importance in the successful management of all acute abdominal disasters. A large number of instances of bowel obstructions are recognized rather late in their course. No colic of the abdomen, however, is more easily identified than that of the intestine. In a patient complaining of intermittent crampy, colicky pain, attended by nausea and vomiting, the audition with the stethoscope of loud intestinal borborygmi synchronous with the acme of the pain establishes the presence of *intestinal colic*. It only remains, then, to determine whether the colic is due to mechanical bowel obstruction, enterocolitis, food-poisoning, or to simple "belly-ache." This differential is usually made with ease on the general symptoms present, such as vomiting, diarrhea, malaise, fever, and tenderness. Accompanying intestinal stasis there is always accumulation of gas in the small intestine, where it is normally not visible in the roentgen film of the adult's abdomen. Visible gas in the small intestine of the adult is synonymous therefore with intestinal stasis. The *stethoscope* determines whether the obstruction is mechanical or adynamic in character.

There are four factors that are commonly observed to contribute to delay in the early recognition of acute intestinal obstruction: (1) failure to appreciate that obstruction of the bowel is not accompanied by tenderness or rigidity of the abdominal wall (strangulation types of obstruction, however, with the exception of intussusception regularly exhibit local tenderness); (2) belief that the expulsion of gas or feces with an administered enema militates against bowel obstruction; (3) assuaging pain with morphin; (4) the deception of apparently effectual catharsis in partial obstruction.

The remedial agents in the management of acute intestinal obstruction are: (1) saline; (2) transfusion; (3) decompression by nasal catheter suction siphonage; (4) operation.

The keynote of successful therapy of acute intestinal obstruction is early release of the obstruction. In the majority of the clinical varieties of bowel obstruction, recourse is to be had to surgical measures of relief.

Saline exhibits the virtues of a specific only in the high obstructions in the first part of the intestine beyond the pyloric outlet, not as an antidote for the neutralization of an absorbed toxin, but rather as a satisfactory substitute for fluids lost by vomiting. The blood chemistry alterations that attend "high" obstructions in the experimental animal may be obviated by the subcutaneous or intravenous administration of saline, and the animal's life prolonged for three to four weeks following complete duodenal obstructions by this means alone. In low obstructions, however, saline is of no special value and does not prolong the life of the experimental animal, neither do the blood chemistry alterations regularly obtain. Too much emphasis has been placed on the value of saline in the treatment of bowel obstruction. Decompression is the most significant item in effective therapy, and very few patients can be prepared for operation in acute bowel obstruction by temporization with saline. During the hour following diagnosis, when preparations are being made for operation, saline is to be freely administered, 3,000 to 4,000 c.c. being given by the subcutaneous and intravenous routes.

In strangulation obstructions the blood loss factor may be significant. In instances of intussusception, volvulus or adhesion torsion of the bowel, considerable blood may be lost into the infarcted segment, and blood replacement by transfusion is a great boon to such patients.

A large number of instances of simple obstruction may be satisfactorily decompressed by nasal catheter suction siphonage. Adhesive bowel obstruction is especially amenable to treatment by this method, whether the causative adhesive obstructing mechanism is of recent (postoperative) or remote origin. Of twelve patients with acute simple obstruction of the small intestine

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time treated at the University Hospital since August, 1931, nine have been satisfactorily decompressed by nasal catheter suction siphonage alone. In the remaining three, enterostomy was done because of the continued persistence of the obstructing mechanism. The rationale of the method lies in the fact that the chief source of gas in the intestine is swallowed air. Just as the evacuation of the bowel incident to the indirect attack of enterostomy upon the obstruction usually permits the continuity of the intestinal current to be reestablished automatically, so drainage from the upper end of the intestinal canal may achieve the same end. The advantage that enterostomy presents over nasal catheter drainage is that feeding may be continued because the drain, in accordance with the logic of good plumbing, is near the obstruction. In the employment of this method it is essential to follow the decompression fairly frequently by X-ray films to be certain that the distention of the intestine is being accomplished, for the patient usually becomes free from pain incident to the stopping of accretion in intestinal distention with the institution of suction. When the distention of the bowel is reduced and gas makes its way into the colon, one knows that the obstructing mechanism has righted itself.

The method is also of value (and was first used in acute mechanical obstructions by the writer to improve the condition of a late case of low intestinal obstruction for operation) in preparing patients with considerable distention for operation in which the cause of the obstruction continues to operate, *e.g.*, stricture of the bowel. It has been employed also in a fairly large number of subacute and chronic obstructions to tide the patient over into a non-obstructive phase in which he may then be operated upon, if necessary.

Nasal catheter decompression is not to be attempted in mechanical obstructions in the left colon where the distention is limited by a competent proximal ileocecal sphincter (as shown by the X-ray film) to the colon alone. In strangulation obstructions, also, immediate resort is to be had to surgery.

The most important task the surgeon has to decide when operating for acute intestinal obstruction is the choice of procedure. When dealing with simple obstruction he should permit himself to be guided by the patient's condition. In early instances he may do the operation of election, *viz.*, locate the obstruction, determine its nature and establish the continuity of the bowel. In late cases of simple obstruction he should do the operation of necessity, *viz.*, enterostomy. An aseptic enterostomy done without spillage, employing a small catheter (14 F) and performed so that it will not leak, may be done in even the late cases with very little risk, and will invariably close itself when the obstructing mechanism below ceases to operate. In strangulation obstructions, the question that must be determined is, "Is the bowel viable?" If not, no matter what the condition of the patient is, the non-viable bowel must be excised. In the majority of instances, it is far safer to exteriorize the devitalized segment and to reestablish the continuity of the bowel by a secondary anastomosis than to do a primary resection with anastomosis.

DISCUSSION

Dr. J. A. JOHNSON (Minneapolis): I have enjoyed Dr. Wangenstein's presentation very much. There are only two points I wish to stress. For the past ten years I have been using the Rehfuess tube for gastric drainage where there has been postoperative ileus present. This has been very satisfactory. I am sure, however, that attaching the continuous suction apparatus and putting the tube through the nose is not only more comfortable for the patient but more efficient. Dr. Wangenstein mentioned that an enterostomy had the advantage of being able to feed the patient through the opening. I have had instances where I have allowed the Rehfuess tube to pass down into the duodenum and

give duodenal feedings. This has been very satisfactory in several cases.

The other point I wish to make is that an enterostomy is of no value in paralytic ileus. The only way that the bowel can be drained efficiently is by its peristaltic movement. When there is no peristalsis, the only part that will be drained is the immediate loop in which the enterostomy is inserted.

Dr. WANGENSTEEN (in closing): It is very refreshing to note this interest in the subject of bowel obstruction. There is one comment I should like to make with reference to the contractility of a dilated bowel, which Dr. Johnson mentioned. He undoubtedly had reference to the distended bowel of inhibitive or so-called paralytic ileus, which distention we all know is extremely difficult to deal with therapeutically. However, now and then one hears implied or frankly stated that patients with acute mechanical obstruction fail to get well, despite late attempts at reduction of the distention, because the bowel had been dilated so much and so long that its inherent power of contractility was gone. I am inclined to doubt such an explanation. All hollow viscera have a great capacity for accommodating themselves to various grades of distention. Unless the circular muscle of the bowel be torn, I rather suspect if a means for emptying the bowel (enterostomy or other decompressive measure) is provided, that its contents will be evacuated. It is undoubtedly true that the peristaltic activity of such a bowel is reduced, but I have been impressed to note at operation how an obstructed small intestine with a paper-thin wall, and so dilated that it takes two fairly long rubber-covered stomach clamps to extend across the transverse axis of the bowel for purposes of isolating a loop that can be entirely evacuated to permit of an aseptic enterostomy, will contract down immediately following aspiration of its content.

My experience with conservative decompressive measures in the treatment of peritonitis has been much the same as that related by Dr. Zimmermann. Nasal catheter suction drainage contributes very materially to the comfort of these patients and makes their convalescence easier. I am not agreed with him, however, that ileus or distention is the most significant item in determining whether recovery from peritonitis will occur. It is my impression that persons dying of peritonitis succumb to their peritoneal infection and not to absorption from the bowel. Much has been written about the present improved results in the treatment of peritonitis over those obtained by our predecessors who were pioneers in abdominal surgery. It is true we have gone far in refinements of diagnosis and surgical technic that contribute to better results. When one considers postoperative peritonitis, however, into the treatment of which these refinements do not enter, he finds that the mortality is just as great as it was forty years ago. Professor Nordmann of the Augusta-Viktoria Krankenhaus of Berlin, in presenting the results of such a study before the German Surgical Congress a few years ago, stated that, whereas the results in appendiceal peritonitis were much improved, there was yet no manifest improvement in postoperative peritonitis.

Dr. LITZENBERG and his staff at the University Hospital have occasionally called us in to try to do something for the distention not uncommonly attending the sepsis of parametritis and peritonitis following induced abortions. The distention that such patients exhibit is usually refractory to the ordinary means which one employs in dealing with postoperative distention. In past years, I have done a few enterostomies for this condition, but have always been chagrined to see how promptly such patients die, when it seemed that if the distention could be adequately dealt with, the patient might continue on with at least a ray of hope for some time. The gentlest intraperitoneal manipulation in such cases helps to disseminate the infection. Within the past year, Dr. Litzenberg's department referred us two

more patients, both of whom were dealt with by nasal catheter suction siphonage alone. One of these was a comparatively young woman with a spontaneous intraperitoneal perforation of a carcinoma of the cervix. She was enormously distended. By employing a combination of nasal and rectal suction we were able to deal satisfactorily with the distention. The patient improved, felt better, and took food again, but despite effectual decompression, after temporary improvement she died of her peritonitis.

Though we have gone far in the treatment of local infections of one sort or another, we are almost as helpless today in the treatment of generalized infections as we were in the pre-antiseptic period. There are no known agents that will aid your patient with a bacteremia. The patient must fight out the struggle himself.

Dr. J. C. LITZENBERG (Minneapolis): If the Chairman may be permitted a word, I wish to say that while in New Orleans I went one day to the scientific exhibits, and got into just one. That one showed work along the line of Dr. Wangenstein's thesis by Ochsner, which he has as yet not published. It will pay you to watch for its publication for I am sure you will find the work unusually interesting after hearing the thesis of Dr. Wangenstein tonight.

Dr. J. A. JOHNSON (Minneapolis) reported a case of Meckel's Diverticulum Causing Intestinal Obstruction.

Master C. J., aged thirteen, was brought to Northwestern Hospital on August 30, 1925, with an acute abdominal condition. The past history was negative except that he had had an operation for acute appendicitis on February 7, 1924.

The present trouble began two days previous to his admission to the hospital. He was suddenly seized with a severe pain which was referred to the navel. This was soon followed by vomiting. He was given cathartics and enemas without any result. The following day his family physician was called and an attempt was again made to relieve his condition with enemas. No result was obtained and he was, therefore, taken to the hospital for operation.

On examination of the abdomen it was found to be very distended and rigid; peristalsis was very active, and he was vomiting repeatedly. His pulse was 132, temperature 99°, and W.B.C. 17,500. The urine was negative.

At operation a Meckel's diverticulum was found located about 20 inches from the ileocecal valve. There was a firm fibrous band from near the tip of the diverticulum, attached to the navel. Several loops of the ileum had become twisted about this band and were obstructed. The diverticulum had perforated near its base and the abdomen was filled with thin, slightly purulent fluid. The band was detached, the diverticulum removed, the purulent fluid aspirated from the abdomen, and a penrose drain placed in the pelvis. There was considerable drainage for 48 hours. At the end of five days the drain was removed and the convalescence was uneventful. He left the hospital on the 17th postoperative day.

In August, 1923, I published in MINNESOTA MEDICINE an article discussing Meckel's diverticulum as an etiological factor in intestinal obstruction, with a report of three personal cases. The literature was carefully reviewed at that time and it was evident that nearly 2 per cent of all mechanical obstructions could be attributed to Meckel's diverticulum. This is my fourth personal case and it seems that Meckel's diverticulum is important enough so that we should keep it constantly in mind. Many authors state that its potential possibilities for trouble are even greater than the appendix.

My reason for reporting this case is to again call this condition to your attention. (Lantern slides were shown.)

Dr. A. E. WILCOX (Minneapolis) reported a case of Perforation of Meckel's Diverticulum by a Fishbone.

The patient, W. F., was a male, aged seventy-one. He gave a previous history of a gastroenterostomy for relief of duodenal ulcer in 1909; excision of the gastric ulcer in 1925; and he was then apparently well, except a postoperative hernia, until his present illness.

On April 8, 1932, he developed pain in the lower abdomen which was not sharply localized, some nausea, but no vomiting. The following morning the pain was more severe, intermittent and the attacks more frequent. Diarrhea was a rather marked feature. He was examined by his physician forty-eight hours after the original pain and, suspecting appendiceal involvement, the patient was admitted to Abbott Hospital about noon, at which time his white blood count was 13,600, temperature 98.4°, pulse 78, and respiration 18. A diagnosis at 5:30 p. m. was probable appendicitis, and exploration advised. The patient was not entirely convinced of the necessity of operation and requested further consultation and observation. At a 6:30 p. m. consultation, the pain seemed to have moved up to a higher position, a little to the right of the midline. There was some resistance in the right rectus muscle.

At 9 p. m., April 10, the pain was again more marked in the right lower quadrant, with definitely increased muscular rigidity, and the consultants agreed on a diagnosis of appendicitis either simple or combined with other pathology of the colon, the nature of which was unknown, and operation was advised.

On April 10, at 11 p. m., operation was done under spinal anesthesia preceded by H.M.C. No. 1. The abdomen was opened through a right rectus incision immediately below the postoperative hernia. No free fluid was noted upon opening the peritoneum. The appendix was easily exposed and appeared innocent; it was, however, removed. The colon was then investigated as high as the hepatic flexure and found negative with the exception of extensive adhesions resulting from previous operations. The ileum was about to be examined when the patient strained (otherwise the spinal anesthesia was satisfactory), and a loop of ileum presented in the operative field, exhibiting a small broad-based Meckel's diverticulum, the apex or greater convexity of which was whitened, and through this area a fishbone protruded into the free peritoneal cavity to the extent of one-quarter of an inch. The pathological problem having been solved, the fishbone was removed and the perforation with surrounding necrotic area invaginated with a purse-string suture of dulox, reinforced with Lambert sutures of the same material. No further surgical procedure seemed indicated and the abdomen was closed without drainage. Convalescence was not markedly stormy; there was a rise of temperature on the second day to 102.4°, leukocytes 23,875, lungs negative, and a progressive decline of temperature to normal on the fourth day was followed by no marked difficulties and the patient rapidly recovered, leaving the hospital on the ninth postoperative day.

DISCUSSION

Dr. MARTIN NORDLAND (Minneapolis): In this connection, I would like to report a case I had three years ago. This young woman, as in the other cases of Meckel's diverticulum, came into the hospital with a diagnosis of acute appendicitis. A mass was felt in the lower right quadrant, by both abdominal and bimanual examinations. She had a low leukocyte count, however. She had a history of a previous abortion, and it was thought this mass might be an enlarged tube. It proved to be a case of Meckel's diverticulum. The diverticulum was invaginated into the ileum from its origin about eighteen inches above the valve and, puckering the distal ileum, came down to and through the ileocecal valve.

It has been stated that Meckel's diverticulum exists

in about 2 per cent of all people and, according to Halstead, causes about 4 per cent of the obstructions of the bowel.

The meeting adjourned.

R. T. LAVAKE, M.D., *Secretary.*

PROCEEDINGS MINNEAPOLIS SURGICAL SOCIETY

Meeting held May 5, 1932

The President, Dr. J. F. Corbett, in the chair

DR. GILBERT COTTAM read his Inaugural Thesis on "Pulmonary Embolism." Lantern slides were shown. (To be published separately.)

DISCUSSION

DR. E. K. GREEN said he would like to report a case which he operated within the last month for a large ovarian cyst. The patient was 46 years of age, in very good health, but had called a doctor because of a severe pain in the region of the right kidney and gall-bladder. The large cyst was discovered and she was sent to the hospital. For three nights prior to the operation, in which she was under observation, she had attacks of pain, usually mild but once quite severe, cutting off her breath and running up into the right side of her neck. Angina was considered one of the possible causes of the pain, but the operation seemed important and was performed. She made an uncomplicated recovery, with only slight temperature for three or four days following the operation. On the ninth postoperative day she seemed exceptionally well when Dr. Green made rounds. About two hours later he was called hurriedly, and reached the hospital in a few minutes to find her in extreme danger with apparent cardiac embarrassment. She died in about twenty minutes.

The postmortem showed a decided calcareous thickening and narrowing of the left coronary though it was not entirely occluded. She had a pulmonary embolus, though the part of the lung involved was comparatively small. This case seemed to Dr. Green rather unique with both conditions present. He also had wondered if she might not have recovered from the embolus if the heart had been perfectly normal.

DR. J. A. JOHNSON thought that probably many of the members felt as he did about this—that one did not really know much about the subject. He had been unable to explain why emboli occurred, and referred to them as the "lightning of surgery." Possibly some type of low-grade infection had something to do with their formation. From the clinical standpoint, one usually finds there is a low-grade temperature, 99.2° or 99.4°, and the embolus usually occurs about the 10th to 14th day. From several years of observation Dr. Johnson had noticed that in certain years they are more frequent than in other years, although he could not explain why. About two years ago there were a lot of cases in the city; then some years even when they are doing quite a lot of surgery there will be almost no emboli cases in the hospital.

The operation which Dr. Cottam described is not especially a difficult one and Dr. Johnson said he had performed it on two postmortem cases. He stated that he had his instruments all boiled up so that if anything happens like that he will be all ready for it. Fortunately nothing had happened in which he would have occasion to use them. He was of the opinion that one could not expect much from the operation; and it should be used only as a last resort, as a possible life-saving measure; and of course all surgeons hope they will not have to do it.

DR. L. H. FOWLER said he might report one patient whom he and Dr. Wm. A. Hanson had operated upon

in 1927. This patient was a woman about 40 years of age, upon whom they had performed a posterior gastroenterostomy and appendectomy for a subacute duodenal ulcer. She had an absolutely normal convalescence until the 10th postoperative day. Dr. Fowler said he was standing by her bed on that morning and had just told the patient she could sit up, when she suddenly was seized with severe agonizing pain behind the sternum and in the right lower chest. An anxious expression appeared on her face and her pulse became very rapid and weak and within a few minutes she became pulseless and cold, and had every appearance of a patient who was dying from a large pulmonary embolus. She was given morphin and oxygen and kept under constant observation by one of them for the next twelve hours. Her condition gradually improved after the first two to three hours and she made a good recovery. She later developed definite evidence of phlebitis in the left leg.

This was a case with all the indications for an immediate embolectomy such as Dr. Cottam has described, were the surgeon prepared to perform the same, but illustrates the fact that occasionally a patient will recover from such a great surgical disaster without the added risk of embolectomy.

DR. THEODORE SWEETSER cited two cases wherein recovery from postoperative pulmonary embolism occurred without surgical treatment in spite of very alarming symptoms at the time of the accident. He also called attention to the prophylaxis suggested before the Society last year by Dr. Clay Ray Murray, *i.e.*, routine determination of the coagulation index of the blood postoperatively, and the use of sodium citrate solution intravenously when indicated. He asked whether any of the members were using that plan.

DR. O. J. CAMPBELL said he had an opportunity, in 1925, to see a number of cases at St. Mary's Hospital in Rochester. One particular case was recalled, that of a surgeon who had several severe pulmonary emboli from which he eventually recovered. Having a full knowledge of the condition, the patient was able to testify accurately to the relief afforded by the use of large doses of morphin. The objective symptoms were likewise relieved. Though it might seem contraindicated, morphin is actually of great value in cases not immediately fatal.

DR. WM. A. HANSON stated that all the members have been interested in pulmonary embolism, more especially after having cases of their own. Many men have postulated theories as to the cause and the treatment. However, preoperative and postoperative care are the most essential. Dr. R. C. Coffey, and especially his son, Dr. J. C. Coffey, have contributed materially to knowledge of the treatment. Dr. J. C. Coffey found that giving thyroid extract postoperatively to patients with the idea of increasing their metabolism, thereby increasing their circulation with frequent deep inspirations, changing their posture and especially early movements of their lower extremities as well as having the patients inflate small balloons, reduced the complication of pulmonary embolism materially. Pulmonary embolism is very rare in postoperative thyroidectomies in either toxic or non-toxic types.

DR. JOHN H. RISHMILLER reported the following case of Riedel's Struma.

The patient, Mr. R., aged fifty-eight, was first seen April 9, 1927. He had had hay fever and asthma up to eight years ago and this recurred again the previous October and lasted one month. Three years ago he developed hoarseness which lasted two or three days at a time. There was no soreness but he had phlegm in his throat which he could not loosen during the hoarseness. He had no difficulty in breathing when he had this hoarseness.

The examination revealed the neck slightly enlarged but there appeared to be no enlargement of the thyroid

behind the sternum. On palpation, both thyroid glands were densely hard, about equal in size, and slightly enlarged. By pressing on one thyroid the impact was transmitted to the other gland. Apparently the thyroid glands were undergoing adenomatous degeneration.

The patient complained of difficulty in swallowing, which he relieved by grasping firmly the skin over the larynx and pulling the thyroid and trachea away from the esophagus. He constantly complained of difficulty in breathing, on account of the density of the isthmus which connects both lobes in horseshoe fashion and straddles the trachea.

Last week the patient had had chills which were due to influenza infection (or to some infection) lasting a few days. (The patient thought the chills might be due to the thyroids but that is impossible without infection.)

His heart and lungs were normal. The blood pressure was 120/80. He had ten lower teeth, one of which was filled, and eleven upper teeth, three of which were inlaid. His tonsils were small. While the patient was standing his pulse was 108, and while sitting it was 86. The urine showed a specific gravity of 1022, and was normal.

A metabolism test was advised in about two weeks, or after the system was in normal condition from the influenza infection; also an X-ray examination of the trachea.

At the examination of April 20, the patient thought he had lost about 24 pounds since February 22. His weight at the Swedish Hospital when the metabolic test was made by Dr. Drake was 148 pounds. (The basal metabolism showed 62 plus on April 19.) His temperature was 98.6°. While the patient was on the examining table his pulse was 100 to 102, and while he was sitting up it was 104 to 106. His blood pressure was 120/80, and 136/80. With the patient relaxed horizontally on the examining table, both thyroid lobes were found to be firmly connected by the isthmus, as pushing on one lobe pushed out the other and pressing down on one thyroid elevated the other. The left lobe was deeper laterally but neither lobe extended downward into the chest.

On April 23 Lugol's solution was prescribed, seven drops three times a day.

On May 1 the patient entered Eitel Hospital for pre-operative rest to the cardiovascular system. The operation was performed on May 9, 1927, under gas anesthesia, Dr. A. L. Herman assisting. After iodine and alcohol preparation, a Kocher's low collar incision was made through the skin and platysma and a flap was dissected upward to the hyoid bone. The right anterior jugular vein was in evidence but not the left, although there was a large vein on the left deeper in, which was not likely the anterior jugular. The bleeding points were caught and ligated. A central fascial incision was made, separating the right and left short neck muscles.

On the right side the muscle compartment over the right thyroid was opened and the muscles separated from the goiter; the external capsule was incised and pushed to either side, thus exposing the densely indurated lobe. The superior thyroid artery and vein were separated from adjacent tissues and ligated twice with ten-day chromic catgut, and severed close to the goiter. Heavy hemostats were placed on the side of the goiter and incision made in front of the clamps toward the trachea, thus more safely evading the recurrent laryngeal.

On the left side the isthmus was dissected from the lower border of the trachea, the muscle compartment was opened and the goiter separated. The external fascia was incised; this was very filmy, but an effort was made to separate as much as possible from the densely indurated gland. The superior thyroid artery and vein were freely dissected, ligated twice and severed, including some goiter tissue. Hemostats were applied on the outside of the goiter and incision made

in front of the clamps toward the trachea. The gland tissue was removed *en bloc*—right and left lobe with the isthmus.

All bleeding points which had been caught with hemostats were ligated with fine ordinary catgut. The patient was then permitted to come out of the anesthesia sufficiently to produce retching but not vomiting, which started a few oozing points on the left side of the trachea. These were caught with hemostats and ligated. The operative field was entirely dry. The sternothyroideus and sternohyoideus muscles were united with 10-day chromic catgut blanket sutures, leaving a rubber drain with gauze inserted in the lower end of the wound down to the trachea. The platysma was united with ordinary catgut blanket suture. The skin was united with Meckel clips, eight on the right and ten on the left. Gauze was applied above and below the Meckel clips, and a bulky gauze dressing was applied and held in place with crosswise adhesive plaster.

The patient's condition was excellent. His pulse was around 100. He was given M.S. gr. 1/6 and atropin gr. 1/150 when necessary to control nervousness and irritable coughing, receiving in all three hypodermics.

Macroscopically the specimen was of cork-like consistency, with a few dense nodules in the center, and appeared as though there might be sclerosis of the parenchyma. It was so densely indurated that it was practically impossible to apply forceps for traction or for grasping the bleeding points. A question arose as to its being carcinoma but the high metabolic rate—plus 62—is against such supposition.

On May 10, the patient was catheterized at 8 a. m. His pulse was 112, temperature normal, and condition excellent. On May 11 every alternate Meckel clip was removed, and the rubber and gauze drain removed.

Pathologist's report (Dr. W. A. O'Brien) gave the diagnosis as "Riedel's Struma."

On May 21 the pulse for past three days was about 80, coming down gradually from day to day, starting several days after operation. The patient left the hospital for his home.

At the time of this meeting (May 5, 1932) the patient has not been under the care of a physician for some time and is perfectly well.

DR. MARTIN NORDLUND reported the following case of Riedel's Struma:

The patient was a woman, age fifty-eight, whose marital history is negative. The patient stated that she had had a chronic cough and eight years ago was treated for pulmonary tuberculosis, being under active observation for more than a year; otherwise her past history is not important.

For the present complaint, the patient comes with a typical symptom-complex of myxedema which has been coming on gradually for a period of 18 months. The characteristic pallor and puffiness of the tissues, with labored speech, and extreme exhaustion, were markedly developed. This was attended by gradually increasing dyspnea, stridor, and hoarseness. During this period she had noticed a gradual enlargement of her neck, together with a tenderness on pressure.

Examination of the thyroid gland revealed a very hard, tense, and somewhat nodular swelling of both lobes. The basal metabolic rate was minus 34. Because of the age of the patient and the recent loss of about 26 pounds in weight, a tentative diagnosis of "carcinoma of the thyroid" was made.

At operation the thyroid was white, hard and densely adherent to the surrounding structures. Both lobes and isthmus were removed. Microscopic examination showed extensive fibrosis without any evidence of normal thyroid tissue. The patient made an excellent recovery without injury to the voice and without tetany. The compression of the trachea was relieved and the myxedema has been controlled by thyroid substance. The basal metabolic rate since the operation has varied

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from minus 3 to plus 7, with administration of thyroid extract.

Operative treatment in thyroiditis is usually limited to excision of the isthmus, leaving the lateral lobes for support to the trachea. Radical removal was considered justifiable in this case because the mass was so

ordinarily hard, merging with the surrounding tissues. There is no change in the surrounding lymph glands. The specimen has the appearance of having been preserved in formalin before it reaches the laboratory. It is hard to cut.

Microscopically it consists of dense, sclerotic tissue



Fig. 1. Gross specimen of woody thyroid.

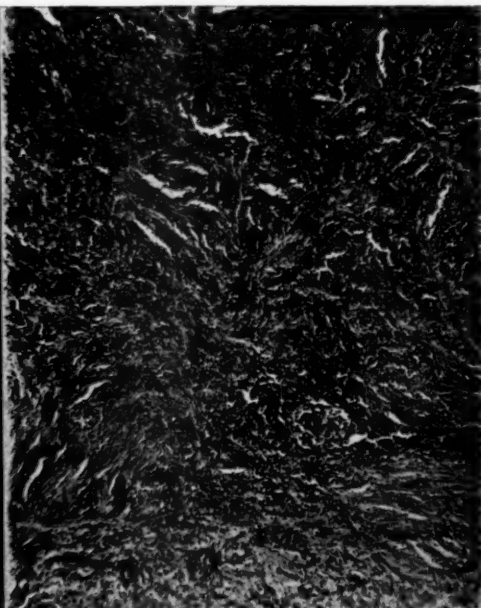


Fig. 2. Microscopic view of woody thyroid. Note extreme fibrosis and total absence of functioning tissue.

suggestive of malignancy and because repeated experience has shown that interpretation of the microscopic appearance of tissue removed at biopsy may be very difficult even to the skilled pathologist.

Because of the difficulty in diagnosis between a malignant goiter and certain forms of long-standing thyroiditis, Dr. Nordland said he thought it might be of interest to report this case, showing the specimen and calling attention to a few of the points in differential diagnosis between this and carcinoma.

Woody thyroiditis, also called "ligneous goiter" and "Riedel's disease," is a rare but important form of chronic inflammation of the thyroid gland. It is of importance because of its liability to be mistaken for carcinoma. In 1896, Riedel published a description of two cases of a condition to which he gave the name of "Eisenharte Strimitis," and, in subsequent years, observation of a similar nature was recorded by the same writer and by others, bringing the total number of published cases up to 17. Boyd, in his text on Pathology published in 1925, had seen only one case.

More than one-half of the recorded cases have been in men. The more common age is in the fourth decade. A distinctive feature is the rapid evolution of the disease. In a few months a tumor develops which produces serious effects by compression of the trachea and the recurrent laryngeal nerves, this being accompanied by dangerous paroxysms of dyspnea as exhibited in this case. It is rare to find evidence of pressure on the sympathetic nerves or upon the esophagus.

At operation the gland presents a remarkable appearance. The enlargement is uniform and involves the whole gland. The surface is smooth, white in color, and the limits are poorly defined. The gland is extra-

ordinarily hard, merging with the surrounding tissues. In the specimen in this case, no evidence of functioning tissue can be found.

In many cases no cause can be found for the condition. Tuberculosis is probably the most important causal factor. While no areas of tuberculosis could be found in this specimen, the history of tuberculosis in this patient is significant.

While chronic thyroiditis is very suggestive of malignancy, it differs in that it usually occurs under the age of forty, and the gland has not previously been the seat of the goiter. Further, the surface is not nodular as in carcinoma, and the lobe retains its normal shape.

DISCUSSION (on two above case reports)

Dr. J. M. HAYES felt that one of the most disappointing things in regard to Riedel's struma is the apparent difficulty of making a definite clinical diagnosis. He recalled a case he had seen about five years ago. The patient, a woman, had a basal metabolic rate of minus 15, but with many of the symptoms of hyperthyroidism. The uniform woody consistency of the gland led them to believe it was a case of this type, yet the possibility of malignancy had been suggested.

The patient was given thyroid extract but improved very slowly. She finally went to see Dr. H. Plummer, who also made a diagnosis of thyroiditis and advised against operation. She continued to take thyroid extract and apparently is well today.

Dr. Hayes called attention to Allen Graham's discussion of this subject at the National Goiter Association meeting in Kansas City. Graham emphasized the difficulty of making a differential diagnosis of this condi-

tion, and reviewed 104 cases gathered from the literature diagnosed as Riedel's struma. Of these he suggested that forty-two came under this classification, while twenty-four were classified as Hashimoto's struma, and others such as adenomata with fibrosis and inflammation, hyperthyroidism, tuberculosis of the thyroid, syphilis of the thyroid, suppuration, etc., were among this number. He emphasized the fact that both clinically and pathologically this condition was difficult to diagnose.

Dr. RISHMILLER said his case had a metabolic rate of plus 68 and he had always questioned why there should be such a high metabolic rate when there was practically no tissue left. It occurred to him that one side might be functioning plus, and the other side functioning minus.

Dr. NORDLAND, in speaking of the difficulty of distinguishing Riedel's struma from carcinoma, said that it is not always easy, particularly if the thyroiditis occurred in a nodular goiter. The most important points in the differential diagnosis might be summarized as follows: The time in development is usually short, about six months; the normal shape of the gland is retained, that is, the poles can be made out; it is not attached to the skin and there is no enlargement of the cervical glands. At operation, in a well-developed carcinoma, the prethyroid muscles are usually attached firmly to the capsule and there is invasion of the vessels. Further, in carcinoma the change occurs mainly in one lobe.

With reference to the case reported by Dr. Rishmiller, and his question pertaining to the high basal rate, Dr. Nordland believed he was dealing with a case of diffuse lymphoid infiltration in its early stages. This is a type of thyroiditis reported by Hashimoto in 1912, and not a true thyroiditis as described by Riedel. The inclusion of this type of thyroiditis accounts for the recent reports of such large numbers of Riedel's struma. This is the opinion of Ewing, who has classified diffuse thyroiditis into two types, the two types being a different stage of the same disease: (1) the diffuse lymphoid infiltration of Hashimoto; and (2) the replacement of acini by fibrous connecting tissue of Riedel.

Dr. RISHMILLER said he was much interested in the case and happened to be in Ann Arbor a few months after seeing the patient, and while there questioned Dr. Warthin on the subject. Dr. Warthin claimed that northern Ohio has quite a large number of woody thyroids, while in this part of the country one sees very few.

Dr. GEORGE S. BERGH, of the University of Minnesota (by invitation), read his thesis which received first prize in the annual essay contest offered by the Surgical Society. This was entitled "Prophylaxis and Postoperative Treatment of Pulmonary Atelectasis, with the Use of Carbon Dioxide in Hyperventilation." Numerous lantern slides of charts were shown. (To be published separately.)

DISCUSSION

Dr. A. T. MANN thought the young man is to be congratulated on his work; that it is worthy of being the Society's prize essay.

Some phases of massive collapse of the lungs interest all physicians and surgeons. Dr. Mann suggested, too, that there may be more medical cases than one is conscious of; that this is a virgin field for the medical man to work in. In the first place, he felt that, as Pasteur was the first man to classify massive collapse and as his cases were all medical cases (cases of diphtheria), it is rather suggestive that the physician and the roentgenologist may have a productive field in their medical cases. Massive collapse in surgical cases is usually so amenable to treatment, even though the symp-

toms are so alarming, that it should stimulate the physician in the study of medical cases.

In regard to the real cause of massive collapse, or the real sequence of events which lead up to it, one is still considerably in the dark. It is known that it occurs less often after strong respiration than after quiet respiration. There is decreased vital capacity in all the cases in which it occurs, and with it there is more or less blocking of the air passages, and that blocking is tenacious mucus. But it is not settled at all as to the cause of the mucus plugs and the sequence of events which lead up to them and up to the massive collapse.

Dr. Mann felt it is possible that certain reflexes through the vagus or through the autonomic nervous system may first cause active contraction of the bronchioles and be the forerunning condition which allows the mucus to become viscid and form the obstruction which allows the collapse to occur.

In regard to the treatment of these mucus plugs, Dr. Mann said of course the nose and throat men have pulled some of them out through the bronchoscope, but some of the cases so treated have not recovered. He felt that bronchoscopy was a severe ordeal for a patient after a serious operation and with a massive collapse. It adds materially to the patient's depression.

As the essayist stated, collapse does occur under local and spinal anesthesia, as well as with general anesthesia. And it occurs in other than abdominal operations. It occurs sometimes without any anesthesia and without operation. Dr. Mann stated he had seen the record of one case in a young man with an injury to the hip. This patient went into a condition of massive collapse right under the doctor's eyes when he was in the X-ray laboratory for a diagnosis.

In regard to treatment of massive collapse, Dr. Mann felt there was no question at all about the use of CO₂ and its beneficial effects, and usually one good series of good breathing which clears out the whole lung stops the advance of the atelectasis. He called attention to the fact that Scott of Rochester, N. Y., who was the first to introduce this method widely, had in his first 2,000 cases of postoperative observations something like 1.5 per cent of atelectasis without the use of CO₂. In the next series of nearly 5,000 cases—the number in which they used it just after operation—they still had some cases of atelectasis, but there were only one-sixth as many. In other words, there were six times as many without the prophylactic CO₂ as with its use.

In using the posture methods, Dr. Mann felt there was one caution to be observed. It is a good thing to put the patient on the well side and percuss gently on the affected side in order to get the mucus out and get the lung open, but he should not be kept in that position too long or he may have an atelectasis on the well side.

Dr. BERGH (in closing) stated that in the postural treatment of Sante the patient is placed on the unaffected side, rolled back and forth, and is encouraged to cough.

With relation to prophylaxis, carbon dioxide should be used at frequent intervals because, while one may clear up a beginning atelectasis with a single administration, the condition is very likely to recur since factors predisposing to atelectasis are still present and the effects of the carbon dioxide are transitory. This tendency to recur is illustrated by the case reported by Hearn and Clerf from Dr. Jackson's Clinic, which recurred and necessitated drainage bronchoscopically seven times.

Dr. J. FRANK CORBETT, the retiring President, then read his Address on "The Problem of Cancer Treatment." (To be published separately.)

The meeting adjourned.

H. O. MCPHEETERS, M.D., Secretary.

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PROGRESS SECTION

Members are urged to abstract valuable articles which they run across in their reading and send the abstracts to the physicians in charge of the respective sections. In order to avoid duplication it would be well to communicate with one of the section supervisors before the article is abstracted.

SECTION SUPERVISORS

EYE, EAR, NOSE AND THROAT

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PEDIATRICS

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ROENTGENOLOGY

Leo G. Rigler, M.D. University Hospital Minneapolis, Minnesota	J. D. Camp, M.D. Mayo Clinic Rochester, Minnesota
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SURGERY

A. E. Sohmer, M.D. Mankato Clinic Mankato, Minnesota	O. J. Campbell, M.D. Medical Arts Bldg. Minneapolis, Minnesota
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EYE, EAR, NOSE AND THROAT

THE PROGNOSTIC SIGNIFICANCE OF SINUSITIS IN CHILDREN: Lyman Richards, M.D., Boston (Trans. Amer. Acad. Ophthal. & Otolaryng., 1931, p. 171). Within the past ten years there has arisen a recognition by the public of a new disease, sinusitis. In an effort to assemble sufficient data to more fully understand the problems, the author examined the records of 500 cases of sinusitis in children treated at the Children's Hospital in Boston over a period of fifteen years. These data were obtained by three avenues of approach: (1) hospital records; (2) replies to questionnaires sent to mothers of children so treated, and (3) X-ray films of children brought back for that purpose. Information was sought as to (a) course of the disease, following medical or surgical treatment or both; (b) status of the sinus itself, especially relating to symptoms, and (3) an estimation of the value of different types of treatment.

(1) The series comprised only those showing positive X-ray findings of involvement of the antra. The children were chiefly five to ten years of age. The cases were adjudged acute or purulent and chronic or thickened membrane. Treatment was divided into medical and surgical. The latter included (a) tonsillectomy and adenoidectomy, (b) antrotomy, (c) middle turbinectomy, and (d) radical surgery. In the case of chronic sinusitis medical treatment produced a very small percentage of cures (20 per cent) although a larger percentage improved (42 per cent); but surgery

was very favorable, especially with tonsillectomy and adenoidectomy and turbinate removal. Other types of surgery produced chiefly improvement. In the case of acute sinusitis, here again medicine proved only beneficial by improvement in a greater percentage (50 per cent) of cases; but surgery, especially tonsillectomy (72 per cent) and antrotomy (57 per cent) produced the highest number of cures.

(2) Questionnaires brought answers in 150 instances and these showed that in both acute and chronic sinusitis, the results of medical treatment were better than those of surgical treatment. The average end-result of both forms of treatment was: cured 39 per cent, improved 18 per cent, unimproved 43 per cent.

(3) X-ray studies were made in 75 cases. These showed 41 per cent of the cases clear by re-X-ray, 10 per cent improved and 49 per cent unimproved. Of the cleared cases, 61 per cent were medically treated and 39 per cent surgically treated. X-ray findings checked with symptomatic cure or improvement fairly consistently.

The author urges further study of results of therapy to more fully understand the problems of sinusitis in children.

FRANK W. STEVENSON, M.D.

ASTIGMATISM—ITS ACCURATE DETERMINATION AND CORRECTION: C. S. O'Brien, M.D., Iowa City, Iowa (Trans. Amer. Acad. Ophthal. and Otolaryng., 1931, p. 75). The accurate determination and correction of astigmatism is of the utmost importance to every oculist. Few cases of hyperopia or myopia are uncomplicated by astigmatism. Correction of the astigmatism produces relief of discomfort.

The low myopic and the low to moderate hyperopic astigmatism produce the greatest amount of discomfort because of increased accommodative effort to overcome the errors present. The ciliary muscle is never quiet and gives rise to many asthenopic symptoms such as headache and ocular distress, diplopia, movement of objects, vertigo and referred pains to the shoulders and neck.

Astigmatism can be determined, in the high degrees, with the ophthalmoscope by focusing on the various retinal vessels. The ophthalmometer is of little value inasmuch as it measures only the corneal astigmatism and the latter is much altered by that present in the lens when the total error is determined. Skiascopy gives the closest approximation of the astigmatic error. Manifest refraction is often unsatisfactory due to unquiet accommodation and unequal contraction of the ciliary muscle. In myopes, the dynamic method is the best while in the hyperopes, the "fogging" method is more applicable. Cycloplegics are indicated in all except elderly persons with little accommodation. Scopolamin in 1/5 per cent aqueous solution is highly recommended. Homatropin often proves unsatisfactory.

Skiascopy by spheres and cylinders is recommended as the most accurate method of determining the astigmatic error. The meridian requiring the weakest lens is neutralized by means of spheres and the astigmatism neutralized with added cylinders in the axis of the band of light.

The subjective test under cycloplegic is advised although its success depends upon the reaction of the patient and the eye. The full correction is placed in the trial frame, the axis of the cylinder carefully checked and the sphere and cylinder reduced by 0.5D. Then the correction is strengthened by adding 0.25D until the best visual acuity is obtained. Jackson's crossed cylinders are highly recommended.

Relief is obtained when the cylinder properly neutralizes the astigmatic error. It is better to undercorrect slightly the cylinder than to overcorrect. In children, the full cylinder is always prescribed. With cylinders under 1D, always give full correction. Cylinders with an oblique axis are difficult to wear. In these cases,

glasses are placed close to the eye, the optical centers lowered 3 to 4 mm. below the geometric center and the pupillary distance made to conform exactly to that of the patient. Lenses should not be round, as these turn in the frame and change axis. Frames should be strong, as bent frames will change the axis. Nose glasses should not be worn.

FRANK W. STEVENSON.

PEDIATRICS

GLYCEMIA IN CACHEXIA OF NURSINGS: E. Jaso, M.D., Assistant Physician, Provincial Institute of Puericulture, Madrid, Spain (Amer. Jour. Dis. Children, Vol. 43, No. 5, May, 1932). Cobliner found that the blood sugar was lower in malnourished infants than in normal ones. The conclusion is drawn that the degree of glycemia in dystrophic infants is lower than in normal ones. The figures given by the authors mentioned show an average blood sugar of 0.72 mg. in dystrophic infants. Considering 0.88 as the normal average for nurslings, this average is seen to be 18.9 per cent lower. The lower the blood sugar, the more accentuated the nutritional disturbance will be.

According to the author's data, the average dextrose content of the blood in the nutritional cachexias is 0.53 mg. per thousand cubic centimeters.

The nearer to the time of death that the determination was made, the lower, in general, was the figure for the blood sugar. In the ten days preceding death, the blood sugar was 0.32 mg. on an average; between ten and twenty days prior to death, it reached an average of 0.47 mg., and more than 30 days before death, the average was 0.57 mg.

The tolerance of hypothyretic infants for dextrose seems to be even greater than that of healthy infants.

The existence of a blood sugar value that is, on an average, 43 per cent lower than normal is confirmed in simple nutritional cachexias. The intensity of hypoglycemia is in proportion to the denutrition. The presence of hypoglycemia has not been confirmed in dystrophies of specific cause (syphilis, tuberculosis). The blood sugar remains within normal limits in hypothyretic infants in whose diet cereals are included. The blood sugar returns to its normal value when the patient with athrepsia is progressing toward recovery. The blood sugar of nurslings can fall as low as 0.3 mg. per thousand cubic centimeters without clinical signs of hypoglycemia.

R. N. ANDREWS, M.D.

VALUE OF PROPERLY MODIFIED POWDERED MILK IN INFANT FEEDING: H. R. Litchfield, M.D., Brooklyn (Arch. Ped., Vol. XLIX, No. 5, May, 1932). In some cases, circumstances are such that early weaning becomes a necessity; then we must choose our food for the infant with the utmost care.

When, however, definite indications arise which make it imperative that an infant be weaned early, the problem of adequate and proper feeding is one which taxes the ingenuity of even the most careful practitioner. The preventive measures necessary against malnutrition are proper diet, proper hygiene and normal amount of exercise. If the child is not nursed, properly modified powdered milk in correct dilution is suitable for infant feeding.

Eighty-four newborns were given Lactogen as a routine feeding instead of plain water within 18 hours after birth, the dilution being one tablespoon of Lactogen to two ounces of boiled water. Sixteen cases had the usual drop in weight at the end of three days, but picked up very rapidly thereafter. Sixty-six infants showed no loss in weight and gained daily and were far past their birth weight at the end of 12 days.

The results of this extensive test with Lactogen

proved to the author that it can be used in place of fresh whole milk very successfully as routine in infant feeding and for the supplementary feedings of the newborn.

In caring for these artificially fed infants, the author keeps adding the vitamins A, B, and C. The administration of orange juice and cod liver oil begins not later than the end of the first month, cereals at the end of the third month, egg yolk at the end of the fourth, and green and starchy vegetables at the end of the sixth month.

R. N. ANDREWS, M.D.

THE PEDIATRICIAN'S OBLIGATION—A PSYCHOANALYTICAL OBSERVATION DEALING WITH THE PREVENTION OF NEUROSES IN CHILDREN: Bertrand S. Frohman, M.D. (Arch. Ped., June, 1932, Vol. XLIX, No. 6). We are once more approaching a phase which we may term psychological medicine. The author firmly believes that many of the neuroses which the general practitioner, psychiatrist and psychoanalyst are confronted with are preventable.

Many of the child's problems, psychologically speaking, are parental ones. Few parents realize that these curious little witnesses of the domestic upheavals register far more than adults recognize. The child's physician has the opportunity of entering the home sensing the domestic atmosphere and if he is observing can prognosticate as to the future nervous make-up of his little patient. He should never forget that the child patterns his human objective after one or both of the parents.

The author should like to impress the reader with the necessity of the pediatrician's careful observation of the home environment and particularly a study of the parent. This message is inspired purely in the ideal of stimulating the pediatrician to further consider the psychological phase of his specialty and to enlarge upon his field of endeavor.

R. N. ANDREWS, M.D.

SURGERY

SURGERY OF HYPOSPADIAS AND EPI-SPADIAS IN THE MALE: Arthur B. Cecil, M.D. (Jour. Urol., Vol. 27, No. 5, May, 1932, p. 507). This is an excellent review of the surgical treatment of these congenital defects. The author reviews the most important advances and operative technic developed in this field.

The most important and fundamental principles are absolute diversion of the urinary stream, accompanied by occlusion of the urethra by suture. No drainage tubes, probes, nor any other foreign bodies should be left in the newly formed urethra.

The correction of the deformity is done as a primary operation during the first two years of life, and no further plastic work done until the deformity is definitely cured. Autoplastic free grafts, such as veins, arteries, etc., have proven unsatisfactory, and are usually followed by sloughing or suturing.

The advancement of the urethra, according to Beck's technic, is used in only minor degree cases of hypospadias. The most successful method of reconstructing the urethra is the method of Thiersch with suitable modifications.

Epispadias is curable only if the incontinence can be controlled by proper sphincter plastic. This is best done by reconstructing the bladder neck and urethra according to Young's method.

There are a number of very good diagrams, showing Thiersch's method of reconstructing the urethra in both penile and perineal hypospadias.

A. E. SOHMER, M.D.

BOOK REVIEWS

ANNUAL REPRINT OF THE REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR 1931. Cloth. Price, \$1.00. Pp. 100. Chicago: American Medical Association.

This volume contains the collected reports of the action of the Council on Pharmacy and Chemistry on all products which have been found unacceptable or which have been omitted from New and Non-official Remedies during the past year. It contains also the special reports authorized by the Council during the year and preliminary reports on articles which show promise but which are not yet ready for admission to New and Non-official Remedies nor suitable for general use by the medical profession. Among the reports on products found unacceptable are those on Thyrophysin, a preparation of posterior pituitary and thymus, advocated as a safe and reliable means of accelerating delivery and marketed under false claims as to its essential action, as to its strength, and as to its safety for mother and child; on Bismuthoidal, claimed to be colloidal bismuth, and marketed with unwarranted claims of value in the treatment of syphilis intravenously; on Frenly Enema Cream, a complex, unscientific mixture, marketed under a therapeutically suggestive name with unwarranted claims of therapeutic value in a host of conditions; on Hayner's Normaline, an unoriginal preparation of formaldehyde and zinc chloride marketed under a non-informing name without a quantitative statement of composition on the label or in the advertising and with unwarranted and misleading claims; on Pernocton, a barbituric acid product marketed under a therapeutically suggestive name and with unacceptable recommendations for intravenous use; on Solution Normet, an unscientific mixture of citrates, marketed with unwarranted claims; on Alqua Water, Calso Water, and Alka Water, irrational, proprietary "alkalizing" mixtures marketed with unwarranted and misleading claims. The preliminary reports on Nucleotide K 96, a preparation of pentose nucleotides which has shown promise in the treatment of leukopenia, and on Carbarsone, p-carbamino-phenylarsonic acid, proposed for use in amebiasis but needing further confirmatory evidence of value, are both timely and in-

teresting. Perhaps the most noteworthy are the special reports, The Intravenous Use of Barbitol Compounds and The Average Optimum Dosage of Cod Liver Oil. The former gives the Council's considered verdict on the dangers and limitations of the use of barbital intravenously and the latter gives the result arrived at from a questionnaire sent to leading pediatricians.

NEW AND NON-OFFICIAL REMEDIES, 1932, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1932. Cloth. Price, postpaid, \$1.50. Pp. 492. Ivi. Chicago: American Medical Association.

The recognition of a preparation for inclusion in this book singles it out from the host of new products of the pharmaceutical manufacturers as being a worthwhile addition to the existing armamentarium of the practicing physician. To be thus distinguished it must be shown, under the impartial scrutiny of the carefully chosen group which is the Council on Pharmacy and Chemistry, that it has acceptable evidence of therapeutic usefulness and that it is marketed in accordance with the honesty and straightforwardness envisaged by the excellent Rules which have been the outgrowth of the Council's quarter century experience in appraising the merits of new drugs.

In accordance with its custom of keeping the annual editions of New and Non-official Remedies in the forefront of current medical thought, the Council offers in this volume the newly revised articles: Barbitol and Barbitol Compounds; Fibrin Ferments and Thromboplastic Substances; Liver and Stomach Preparations; Mercury and Mercury Compounds; and Ovary. Perhaps the most noteworthy new preparations admitted are: nupercaine-Ciba, a local anesthetic; pentobarbital sodium, a barbituric acid derivative; and iopax, a new preparation for roentgenologic use. All of the ovary preparations formerly described are omitted and none of the new standardized preparations are described, although the names Theelin and Theolol are recognized in the revised general article. Another change of importance is the classification of articles formerly listed as "Exempted" under the heading "Accepted but Not Described." There is the usual excellent index and the augmented Index to Proprieties Not Included in N. N. R.

THREE GENERATIONS of experience in grinding, specializing in fine surgical instruments. Prices, reasonable. Schwarz Grinding Service, Foot-Schulze Bldg., 128 10th St. E., St. Paul. Telephone, Midway 9939.

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(April)

NAME	SCHOOL AND DATE OF GRADUATION	ADDRESS
Belzer, Meyer Simon	U. of Minn., M.B., 1931	K. C. Gen. Hosp., Kansas City, Mo.
Benesh, Norbert George	U. of Nebr., M.D., 1931	Asbury Hospital, Minneapolis, Minn.
Borland, Verl Gideon	U. of Minn., M.B. and M.D., 1932	University Hospital, Minneapolis, Minn.
Borman, Chauncey Nord	U. of Minn., M.B., 1931	General Hospital, Minneapolis, Minn.
Darnall, Charles Milton	U. of Texas, M.D., 1930	Mayo Clinic, Rochester, Minn.
del Plaine, Carlos Werter	U. of Minn., M.B., 1931	1633 E. River Terrace, Minneapolis, Minn.
Deuterman, Joel LeRoy	U. of Va., M.D., 1930	Mayo Clinic, Rochester, Minn.
Farsht, Irving Joseph	U. of Minn., M.B., 1931	1124 N. Washburn Ave., Minneapolis, Minn.
Fine, Benjamin A.	U. of Minn., M.B., 1931	699 Iglehart Ave., St. Paul, Minn.
Haines, William Henry	U. of Minn., M.B. 1931; M.D., 1932	1218 W. Superior St., Duluth, Minn.
Hassett, Myron Frederick	U. of Minn., M.B., 1931	General Hospital, Minneapolis, Minn.
Herman, Samuel Morton	U. of Minn., M.B., 1931	711 Carroll Ave., St. Paul, Minn.
Johnson, Spencer	Rush Med. Col., M.D., 1929	Mayo Clinic, Rochester, Minn.
Johnston, Leonard Frederick	U. of Minn., M.B., 1931	4816 Garfield Ave., Minneapolis, Minn.
Leck, Paul Clifford	U. of Minn., M.B. and M.D., 1931	General Hospital, Minneapolis, Minn.
Lindgren, Russell Cyrus	U. of Minn., M.B., 1931	General Hospital, Minneapolis, Minn.
Macy, John Willis	U. of Iowa, M.D., 1928	Mayo Clinic, Rochester, Minn.
Mears, Burtis J.	U. of Minn., M.B., 1931	Miller Hospital, St. Paul, Minn.
Murphy, Cornelius Bernard	U. of Minn., M.B. 1930; M.D., 1931	St. Lukes Hospital, St. Paul, Minn.
Nuetzman, Arthur William	U. of Minn., M.B., 1931	810 26th Ave. N. E., Minneapolis, Minn.
Olson, Paul Frederick	Rush Med. Col. M.D., 1932	Mayo Clinic, Rochester, Minn.
Peterson, Willard Henry	U. of Minn., M.B., 1931	2925 33rd Ave. S., Minneapolis, Minn.
Rogne, William Gustav	U. of Minn., M.B., 1930; M.D., 1931	Casselton, N. Dak.
Schulze, Victor Ewald	U. of Texas, M.D., 1928	Mayo Clinic, Rochester, Minn.
Simonson, Sigwert Wallace	U. of Minn., M.B., 1931	Miller Hospital, St. Paul, Minn.
Sonnesyn, Nels Nitter	U. of Minn., M.B., 1931	General Hospital, Minneapolis, Minn.
Sterner, Ernest Russell	U. of Minn., M.B., 1931	1072 Portland Ave., St. Paul, Minn.
Stevens, George Arnold	Col. of Med. Evang., M.D., 1930	Mayo Clinic, Rochester, Minn.
Stuart, Frank Allan, Jr.	U. of Tenn., M.D., 1930	Mayo Clinic, Rochester, Minn.
Trotter, Fred Oscar	U. of Minn., M.B., 1932	681 Lawson St., St. Paul, Minn.
Youngerman, William Martin	U. of Cincinnati, M.B., 1930; M.D., 1931	Mayo Clinic, Rochester, Minn.

BY RECIPROCITY

Chadbourn, Charles Rufus	Northwestern, M.D., 1931	203 Prescott St., St. Paul, Minn.
Furrer, Emil Daniel	U. of Ore., M.D., 1929	Mayo Clinic, Rochester, Minn.
Ingebritson, Ernest K. G.	Rush Med. Col., M.D., 1931	Moorhead, Minn.
McCrimmon, Herman Patrick	U. of Okla., M.D., 1925	3130 Excelsior Ave., Minneapolis, Minn.
Niles, Sidney C.	Northwestern, M.D., 1907	Hamm Bldg., St. Paul, Minn.
Nylander, Emil G.	Chic. Col. M. and S., M.D., 1917	Ellsworth, Wis.

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Dwan, Paul Francis	Harvard Univ., M.D., 1928	4509 Dupont Ave. S., Minneapolis, Minn.
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